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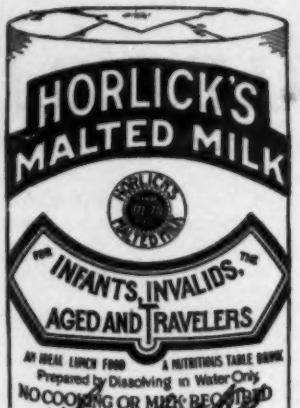
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ILLINOIS MEDICAL JOURNAL

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Original Articles

THE OBLIGATION OF THE STATE TO THE GROWING CHILD.*

CHARLES J. WHALEN, M. A., M. D., LL. B.
CHICAGO.

The relation of the State and the child is broad and close; the obligation between the two is a reciprocal one. Under our system of government the State in the interest of self-preservation demands an educated citizenship; an equally essential condition of useful citizenship is physical health.

If the State has by the enactment of laws compelling the attendance at school provided for the education of the child, not merely for the child's sake, but as a measure of self-protection, it is also bound to take cognizance of its physical welfare for the same reason. One can go further; the State is responsible not only for the sound body, so far as it can supply the needs for its development, but for the sane mind as well.

Anything that contributes to the physical well-being of the race is no small factor in the promotion of social content. So that when we speak of steeling the growing body of the child with strength by removing physical impediments, we are insuring that child a sturdy physique, also insuring society against the cost of supporting non-producing units in almshouses, hospitals, prisons and asylums.

Education today should attempt to raise the social order to a higher material, mental and ethical plane. State inspection of school children which is merely precedent to the correction of the physical defects, will through the medium of compulsory health reduce sickness, misery, destitution, crime, all of which are sequelæ in the order named. Health is a necessary complement of communal economy. Should one single member of society be rendered unproductive through complete or partial reduction of his physical or mental vitality society as a whole suffers. Society must therefore assume the obligation of caring for its non-producing through its producting units by taking a share of the proceeds of its producing parts and contributing it to its economically pauperized member.

Vigorous intellectual activity is possible only through the medium of brain cells that are well nourished and physiologically active. Any system of education which ignores the physical development is faulty. Proper care of the children in infancy and childhood tends for efficiency in adult life.

In our large cities especially the desired physical status of the children has not been attained. We find many poorly born, poorly housed and fed, deformed or defective in one or more respects, with little in their environment to produce self-supporting, self-respecting citizens.

Poverty, ignorance and uncleanliness have much to do with the life of the child before and after birth. The first may be avoidable; the second a matter of personal choice, and the third may be imposed; frequently they are all accepted as the way of least resistance.

Poverty blights the mind, weighs down the spirit and opens the way for all manner of evil influences to the mother. As a result the child is presented to the world under conditions which preclude even ordinary care; again, uncleanliness opens the door to disease. Ignorance also may be a sourceful cause of disease and depraving conditions.

After disease has developed the doctor may suggest proper methods of care for the child; that is putting the cart before the horse.

For most physical defects can be prevented if recognized sufficiently early and the proper corrective procedure applied, and if done at the proper time the child's intellectual development

*Read before the Public Health Section of the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

will be allowed to proceed without detriment or hindrance.

The State, recognizing the importance of this factor, should assume the obligation to provide the opportunity to needy children that remedial defects may be properly treated. Picture if you can these handicapped, defective and discouraged children drifting into hopelessness and despair, because the State, as its legitimate guardian and protector, overlooks and neglects its needs.

In the years of early childhood how often are the seeds of disease sown? The delicate tissues are easily warped or injured by long continued mental or physical efforts and for this reason children are often injured by injudicious schoolwork.

Note with what avidity parents push out the "tiny tots from the home into kindergartens." The task is set; lessons are to be learned; attention demanded; the care-free natural spirit curbed and repressed. So early, in fact in real infancy, are the routine duties of real life imposed. The eyes are on strain, the nerves are on tension, the muscles are set in stated attitudes; all of this that the tot may leave the mother carefree, less frequently because of the desire to have the child learn something. This is all wrong mentally, physically and morally. If the children were not put into school until seven years or older the nervous wrecks in after life would be fewer.

Neither parent nor State has a right to rob the child of its care-free childhood. As a prophylaxis against future ills, it will but conserve his energy for the battle of life, when allowed to refrain from school work until the age mentioned. Then he will be sufficiently hardened to carry on school work without physical or mental injury and will invariably outstrip the child who began school learning at four or five years of age.

The State has a vital relation to the child in yet other ways. After he becomes of a school age it is necessary that his life be guarded in every way. The general health should be looked after, and the earlier in school life his or her need of special attention can be discovered the more perfectly will all interests connected therewith be served. Equally important as guarding against contagion and infection are the conditions to which children are subjected in location, architecture, lighting, heating, ventilation and seating provisions for recreation and environment of the school buildings. Supervision for this purpose is but a step closer to the study of influences which work for good or ill of the child subjected to them. The less tangible nature of these influences when they are of a faulty character make it more difficult to point to them as the direct cause of ill health in the pupils.

In Chicago in 1915, 87,099 children were examined and 21,730 were excluded from school because of contagious diseases.

Physical examinations of 79,383 school children found 37,356 defective and 32,860 were advised to seek treatment. A tabulation of the defects of 35,166 pupils shows the following: Malnutrition 804, anemia 2,639, enlarged glands 7,970, goiter 1,556, nervous diseases 340, cardiac diseases 414, pulmonary diseases 68, skin diseases 701, orthopedic defects 171, rickets 372, defective vision 7,837, other diseases of the eye 1,076, defective hearing 663, discharging ear 372, defective nasal breathing 2,603, defective palate 971, defective teeth 22,711, hypertrophied tonsils 11,777, adenoids 4,489, tonsils and adenoids 4,350, mentality poor 1,196, fair 8,586.

According to Dr. Wood of Columbia College, New York, a nation-wide investigation of the children in the public schools of both city and rural districts shows that there are 20,000,000 children in the public schools at present.

As long as the youngster does not actually get sick or die we assume that he is well, but the fact is, that 75 per cent. of these children—that is, fifteen million of them—need attention for physical defects sufficiently grave to seriously threaten health, usefulness and even life in later years; that 5 per cent. of children have a tendency toward tuberculosis, and the disease is easily evolved in them.

Five per cent. have flat foot, spinal curvature or other deformaties sufficiently grave to interfere with health. Five per cent. have defective hearing. Twenty-five per cent. have defective vision; thirty per cent. suffer from malnutrition; fifty to ninety-eight per cent. have defective teeth, which interferes with health; thirty per cent. have adenoids, enlarged tonsils or cervical glands needing attention. The loss to the world through physical inefficiency is absolutely incomputable.

In Boston sixty-five per cent. of the children have physical defects requiring treatment; of those having defects needing treatment eighty-

seven per cent. of the defects are of the teeth, throat, nose or ear. Pages and pages of statistics could be cited, but surely the above is sufficient to show clearly the importance of State supervision of the growing child.

Twenty per cent. of all who drop out of school do so because of ill health. Those having removable physical defects make ten per cent. slower progress through school than the children who are not so handicapped.

To illustrate, take a child who is somewhat deaf; it fails in its studies and is obliged to repeat its grade, losing time and place and, lacking a certain esprit de corps due to this loss of rank, he gives up then or when he reaches his fourteenth year, reasoning that he cannot hope to graduate at the usual age.

Very few realize what retardation alone costs the State, and this quite outside of self-depreciation engendered by the realization of the unfitness for the race of life.

The "repeaters" (children in one grade over one year), as given by Leonard P. Ayers, are estimated to cost $27,000,000; and this necessarily leaves out of the count the ultimate effect upon the mentality of the child, of the moral degeneracy often ending in vice and crime that so frequently overtakes the victim of enforced idleness or uncongenial occupation.

Having demonstrated that numberless defects exist among our school children, in not correcting these conditions the State is denying them the first essential of social competency. The physical condition of the child which precludes the orderly educational process from functioning properly, conduces to a low degree of efficiency. These social denials make for incompetency, which later produces dependency, waste and misery. The care of the defects will undoubtedly help to reduce and prevent poverty; it will assuredly do much to check the possibility of later destitution.

In a personal examination of 100 backward school children who were unable to concentrate the attention I found 92 revealed adenoid growth with diseased tonsils. All had diseased or defective teeth and in the 8 not manifesting adenoids and tonsils there was pronounced nasal obstruction.

Disease of the faucial tonsils and of the adenoid tissue has long been recognized as an important predisposing and causative factor in the physical and mental retardation in the child.

Judge Mack's "straight road from adenoids to the penitentiary" is not an exaggeration.

Kyle states: "In 90 per cent. of cases of adenoid vegetation there is involvement of the eustachian tube with deafness in varying degree." The education of many a child has been rendered difficult or entirely stopped because he or she could not hear the instructions as the other children did. This shows where the difficulty frequently begins. Inability to hear is discouraging; speech is limited and mental development is thereby stunted. Called a stupid child, he soon becomes vicious. The loss to the community in money wasted in attempts to teach such a child and the future untrained mind which so readily becomes criminal is untold.

A constant hyperpyrexia is likely to be present whenever this hypertrophied condition exists. In other words the child is at all times more or less septic.

The alterations in the bony structures of the face and thorax caused thereby appear early, as does malnutrition and lessened resistance to disease.

The retardation in mental development is caused by the continued sepsis as well as the mechanical obstruction and resulting reflex irritation. The difficulty in breathing further adds to the discomfort and gives rise to inability to concentrate attention.

Widespread infection of the teeth of school children is a large factor in causing delinquency, manifesting itself not alone in the dental health of the individual child but asserting itself in general physical disorders, the miscarriage of the educational economy, the imperfect preparation of the child for life, the general lowering of the vitality, rendering the plastic child especially susceptible to disease while impairing its prospect of future efficiency. Neglect of the teeth means deformity of the jaw, inefficient mastication, a source of constant supply of toxic material and foci of disease which may even threaten life.

As a result of continuous action of these undermining factors the child is unable to apply himself to his studies, he soon falls hopelessly behind his classmates and casts about for other means to keep his mind occupied, thereby getting himself into mischief of various kinds. His school duties becoming hateful to him, he becomes truant and finally, coming into conflict

with the authorities through his desire for constant change and excitement, ends in the Juvenile Court and reformatory.

If adenoids and enlarged tonsils cause respiratory disability, which in turn render the child less amenable to instruction and accordingly results in the loss to the child of the opportunity to learn a skilled trade or profession, the child will suffer from the intermittency of unskilled employment and its concomitant low wage. Under these circumstances adenoids and enlarged tonsils are enemies of the social order.

If decayed teeth are a predisposing factor in an attenuating disease such as tuberculosis, the cost of housing our tubercular unfortunates is not only costly from the material point of view but hopeless from the human aspect.

Having clearly shown that the hypoplastic child, fundamentally unstable, and still further handicapped by deafness, enlarged tonsils and adenoids with their attendant train of evils, is prone to respond in an exaggerated degree to faulty environmental influences of all kinds, is it not the duty of the State and society to give the child the most careful study and attention so as to insure the advancement of which he is, in a great number of instances, capable?

The early discovery of the dull and backward and the defective child and their segregation for special training is the duty the State owes the child as well as society.

There are schools for crippled children, the blind, the deaf and mentally defective. Here and here alone can such youth be made self supporting. In America 250,000 children are said to drop out of the schools each year because of physical disabilities. To hold a large per cent. of these in school will be the function of the State in the future. Intsead of sitting quietly by and seeing this process of race destruction going steadily on we should be up and doing in the way of discovering and eradicating the causes that are blighting the vitality and vigor of the race in the early years of life.

It has been argued that the principle which provides for free treatment for physical defects of school children is not sound. This is based upon the reasons that it is not the duty of the State to provide such treatment; that it tends to pauperize the recipients and that through indifference, poverty and neglect the causes of these unfortunate conditions arise; through public treatment a premium is put upon parental inefficiency and it tends to aggravate conditions by relieving parents of responsibility.

A certain number of physicians are disturbed by this institution, fearing lest the examining physician, being called on to place on the record the results of the periodical examinations that he makes, may in some way prejudice the ordinary physician of children.

The examining physician is to put on the record only the findings of his own examination, enabling him to determine that the general health of the child (weight, height) is or is not satisfactory; that certain symptoms or apparatus (lymphatics, teeth) are or are not normal; that certain organs (eye, ear) are functioning well or ill. Thanks to these regulations, the school physician will be able, without defining either the nature or the cause, to inform the parents that the growth of the child is not good, that its general health is poor, that the functioning of certain organs is defective. At the same time he will point out the necessity of having the child examined by the family physician, who alone can establish the diagnosis and institute the treatment. Thus the parents will be given the opportunity to submit the child to examination by their family physician and entrust it to his care, which they would in all likelihood not have done, or would have done too late, if they had not been warned in time by the school physician.

The examining physician has no further control to exercise either in regard to diagnosis or treatment.

In Chicago experience has shown that parents are able and willing to care for their children once their attention is called to conditions which require treatment. The widespread prevalence of physical defects among school children of all classes does not call for the usurpation of the parents' obligations. The average citizen is not supposed to be versed in medical, dental and hygienic affairs about which no effort has been made until the present time to provide information; and the present system of informing parents of defects, of explaining to them the necessity of having these defects corrected, has an educational value.

Children whose parents can afford to pay for private treatment should go to private practitioners whose livelihood depends upon such pro-

fessional service. Investigation has shown that in the case of defects there are so many poor children who cannot pay for treatment that unless clinical provision is made for them they will receive no attention whatever. Therefore, the facilities whereby they may avail themselves of these benefits to the utmost should also be provided for the reason that the return in social efficiency incident to putting children in good physical condition more than offsets the cost of caring for the children later in life when the results of social neglect have accumulated and left them with chronic disorders. Neglected children are apt later in life to become unproductive citizens who must be taken care of by society.

Is it not better for society, to say nothing of the benefits to the individual, if the State comes to the assistance of those whose parents or guardians are unable to provide for corrective treatment at a time when something can be done towards remedying defects, than to be called upon later to provide large sums for the construction and maintenance of hospitals, reform schools and jails?

Now that medical research has discovered that malnutrition, anemia, stomach ailments, facial neuralgias and scores of abnormal conditions frequently have their origin in adenoids, diseased tonsils and unhygienic mouths, the correction of these is beginning to be recognized as indispensable agents of the public health movement.

25 E. Washington St.

THE USE OF CLEAN, RAW COW'S MILK IN THE FEEDING OF INFANTS.*

GRACE H. CAMPBELL, M. D.,
CHICAGO, ILL.

More has been written and said concerning artificial feeding during the past ten years than all other pediatric subjects combined.

Having studied natural feeding, we should have a fairly practical knowledge of the quantity and quality of food required at different ages, and also the time and method of feeding. That we should keep close to nature both in the compositon and physical properties of the food, seems hardly necessary to state. Yet we see infants fed (?) on compounds differing so widely from those which their organs are prepared to digest that it is surprising so many survive.

The stomach of the infant at birth is found to be little more than a receptacle for food in which the action of rennet coagulating the milk prepares it for the first step in the digestive process.

As the infant grows the capacity of the stomach increases rapidly, its walls thicken, the glands develop and pepsin and hydrochloric acid secretions gradually become more abundant. It is not, however, until after the sixth month that the salivary and pancreatic secretions develop to any great extent the power of converting starch into sugar.

This conversion is necessary before cereals may enter largely into the food, as nature has made little or no other provision for the digestion of starch.

During the latter half of the first year the stomach empties itself of a digested meal in two or three hours, the time depending upon the quality of the food taken. The fat content of the milk regulates the time required for complete digestion.

That a very large percentage of the food is absorbed in the normal infant normally fed, is shown by analysis of the feces. As a result of observations upon infants fed wholly upon milk, it is stated that the feces consist of 84 to 86 per cent water; that digestion and absorption of proteids in the alimentary canal is so efficient that but little is lost.

Cow's milk, on account of its cheapness and the abundant supply, is the most available substitute for mother's milk. The proneness to stomach disorders and the great mortality among bottle-fed babies has led to a systematic study of cow's milk.

It has been proved that milk production may be so guarded as to furnish a product comparatively free from bacteria. As an example of what scrupulous care and cold can accomplish in producing bacteria-free milk may be mentioned the exhibits of a number of American dairies at the Paris exposition in 1904. Milk and cream were shown that remained sweet for several days after the journey of ten days or more. The officials found it hard to believe that no preservatives had been added or treatment given until convinced by analysis and by proof.

The same care in the selection of the cow is recommended as in the selection of the wet nurse;

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

the same details in her hygiene, as well as in the aseptic care of the milk, will insure milk that is practically sterile.

In the choice of the family cow three requisites at least should be kept in view. First: The quality of the milk. Second: The constitution of the animal, her hardihood and freedom from disorders and her adaptability to variations in climate and food. Third: Her temperament and freedom from disturbances due to accidental causes.

In the best of cows, however, the milk varies from time to time in quantity and in quality under the changing influences of food, care and surroundings, so that the popular idea of the great value of a "one cow's milk" supply for the baby is erroneous. The mixed product of a herd secures a greater uniformity in the quality and percentage of constituents. In many communities certified milk is obtainable. Certified milk is produced under the supervision of a Medical Milk Commission appointed by a regularly organized County Medical Society. Certified milk means the best and cleanest raw milk on the market. Only healthy cows are used to produce certified milk. All dairy barns must be sanitary in construction, with special regard to light, ventilation, and general cleanliness.

Only healthy employes are permitted on the farms producing certified milk. All utensils must be kept scrupulously clean and sterilized before using. Milk is cooled to 45 degrees F. and bottled immediately in sterilized bottles and bottles packed on ice.

The selection of the dairyman should depend upon his known methods of handling his herd and its products. Does he select his cows upon the above enumerated principles? Is his herd regularly inspected and tested by a competent veterinarian for evidences of tuberculosis or other diseases? Are the animals properly fed, watered and pastured? Are they comfortably housed in stables that may be cleaned daily and regularly painted or whitewashed? Are the milkers kind, intelligent, healthy, clean, and conscientious? Is the cow cleaned and her udder washed before each milking? Are the first few streams of milk discarded and the remainder received in a sterilized pail through a cover of sterilized cotton and cheese-cloth? Is the milk immediately strained, cooled to 45 degrees F., bottled, and within 20 minutes placed in a cooler well iced, and kept cool until delivered to the consumer?

Rapid cooling and refrigeration are fully as important as cleanliness in the production of safe milk, for the few bacteria which are present in even the most carefully-cared-for milk multiply with enormous rapidity at 70 degrees F., while they increase only five-fold in 24 hours in milk kept at 50 degrees F.

The cold, sealed bottle when received at home must be placed at once in a clean refrigerator (free from taint or odor of other food or vegetables) and kept securely stoppered. The refrigerator should be kept at least as low as 50 degrees F. This point should be tested with a thermometer.

Milk received in good condition is not infrequently rendered unfit for infants' food by careless handling in the home. The bacteria, which, by their growth, render the milk unsafe, are present everywhere: in the air, in every particle of dirt, in water, on the hands and clothes, on all utensils and vessels. No utensil, spoon or receptacle should be used which has not been sterilized. Milk once poured out should never be returned to the bottle, nor should remnants ever be used. Flies (common carriers of infections) must be religiously excluded.

The practice of keeping the baby's food warm, as in thermos bottles, for emergencies is entirely wrong, as it favors the development of any bacteria present and spores which it may contain.

In the artificial feeding of infants, the protection of the supply will ever continue to be the most important consideration.

There are many methods and systems for dilution and modification of cow's milk to best suit it for the digestive apparatus of the infant.

The method which for popularity and elasticity excelled most others is the American percentage method of modified milk. In the use of this method of modified milk, there are many formulæ calculated to meet the requirements of the infants of various ages and conditions. This led to a super refinement of formulæ and complications which the average mother was unable to carry out, so that the popularity of this system is now on the wane. It had the great advantage of establishing the necessity of careful measurement of food given to the baby and led to detailed study of the effect of the various ingredients of milk on the infant.

During the past twenty years many systems have come and gone. These may be summed up as follows:

1. Simple dilution of cow's milk by the addition of water. In this method there is no attempt made to change the composition of the food to more resemble human milk.

2. The modification of cow's milk in some manner that there is obtained a mixture like human milk so far as the gross chemistry is concerned.

3. Dilution of cow's milk with the addition of sugars or starches to increase the carbohydrate content of the food.

4. The addition of a chemical, either to render the food alkaline or to affect the curd, so that the milk coagulates in fine, rather than coarse tough curds.

Each of these several measures has a distinct place in the feeding of infants.

No one method can be relied upon to meet the conditions as found in each individual child.

For a time there was a feeling that the change from breast feeding to artificial feeding was of no especial moment, but the more experience one has in feeding many infants the greater the hesitancy to allow substitute feeding so long as there is a possibility of supplying the natural food. There is an element of experimentation in prescribing any food which is new to the digestive tract in a normal or abnormal child.

In the feeding of infants it is necessary that a certain amount of intelligence be used in advising a food for a child. The dogmatic use of any method must be disastrous for the child that is hard to feed. The percentage method of feeding does not demand that the various percentages should be obtained in mathematical exactness. It is best to consider the percentage method as a rule of thumb by which approximate percentages may be obtained. It is neither necessary nor of practical advantage to have the various percentages carried out to a nicety. It is of far greater value to recognize the condition of the digestive capacity for the various food components so as to realize the food elements that are causing the digestive disturbance.

However, it must be borne in mind that the mere fact that the bowel movements show undigested food is not to be interpreted that the food given is an improper food for the child; it may simply mean that there are more of certain constituents given than the child has capacity to digest and if the food be persisted in there will be a development of capacity to an extent that will enable the child to digest the food, bearing in mind that abnormal constituents in the bowel movements are danger signs, and if these conditions persist with other manifestations of digestive stress then the food elements at fault must be radically lowered.

It is usual, when lowering any food component, to lower to the extreme minimum and then slowly increase the percentage at intervals of about three days, watching for signs of limit of capacity as shown by changes in the stools, restlessness, gas, pain, or temperature.

Milks containing various percentages of cream are used as starting point in various formulæ.

In a quart bottle (32 ounces) of clean, raw, fresh milk that has stood for at least six hours and has not been changed by heat, it is found that the top ten ounces has approximately a ten per cent. butter fat; the top sixteen ounces (one-half the bottle) has about seven per cent.; the top twenty-four ounces contains five per cent., and the lower twenty-four ounces or skimmed milk contains about one per cent. butter fat. These percentages are based upon a milk containing four per cent. fat, and when milks of a higher or a lower fat percentage are used there may be found some variations from these figures. The practice of heating milk may have a distinct effect upon the fat content at any of these levels, as the cream in milk that has been heated to a temperature of 165 degrees F. does not rise.

It is evident from the above that by a selection of the portion of milk taken from the bottle the desired ratio between the fat and the proteids can be easily obtained, as there is no change in the percentages of the proteids or sugars at the different levels.

In the top ten ounces the fat-proteid ratio is two and one-half to one; in the top sixteen ounces the ratio is two to one; in the top twenty-four ounces three to two; while in skimmed milk or lower twenty-four ounces the ratio is one to three and one-half. In whole milk it is about one to one.

The home modification of milk will best be carried out by the use of the desired fat content of milk rather than by the addition of cream. The constituents of cream are not so regular as those found in milk and it is always true that the

bacterial content of cream is much higher than that in the milk. From an economic consideration this is also advisable, as one quart bottle of milk in 24 hours is all that is necessary for the infant up to six months of age. The infant deprived of the milk from the mother should have the best quality of milk available. Where "certified milk" is to be obtained, prudence demands that such milk be used. It will be found economy to pay the advanced price necessary for the extra care.

The feeding of the normal infant is the mere bringing to the child of a food which in a general way meets the requirements as laid down under the "essentials."

In first putting a child upon an artificial diet the usual procedure is to use a food low in all the constituents, bearing in mind that the over dilution probably in no way makes a food any more completely digested but simply renders the food more tolerable.

It is seldom necessary to give a milk dilution greater than one part of milk to one of diluent used. Where there is an apparent necessity for greater dilution a close study will disclose a digestive disturbance caused by one or another of the food components, when it will be advisable to lessen or omit that constituent and increase the other food components.

No fixed, arbitrary rule can be given for all children. Careful observation of the infant as to whether he rejects some of his food soon after taking it or seems hungry half an hour after feeding, may prove a guide. The best indication that he is receiving his full equivalent is a steady weekly gain of two or more ounces in the early months.

The components may be changed from time to time as necessity requires. If it seems desirable to lower the fat content the top twenty-four ounces or even skimmed milk may be used; if on the other hand an increase in the fat is contemplated the top ten ounces could be substituted. The proteids may be decreased by a further dilution, using a higher fat content milk, thus only changing the proteids; the proteids are raised without changing the fat content by using a milk with a lower fat. The sugar is raised and lowered the same as the proteid or by the addition of any one of the sugars.

In the feeding of an infant a great deal of very valuable information is to be obtained by very careful observation. Many points of great importance may thus be brought out which will shed much light on the digestive capacity of the child. One important element is to find, what, if any, food agrees with the child. If a working knowledge of the composition of this food is had, then one has a working basis. This one item frequently is the element between success and failure, as it is the haven of refuge in times of stress.

The purpose is to manage the food in such a way as to develop the digestive power of the baby so that he is able to take whole milk at the end of six months. It has been proved that babies thrive better on clean, whole, raw milk than on any diluted mixtures.

3301 Washington Blvd.

DISCUSSION.

Dr. J. C. Krafft made the following suggestion for the future of this branch in regard to the arrangements: That when the program is made up, it should specify not only the men on the program, but the hours also.

He believed in the early use of eggs in the infant's diet, not in the second or third year, but as early as six months, because the yolk of one egg contains as much iron, just as it is found in the human body, as eighteen ounces of milk will produce. When nothing stays, a little carrot juice will stay, because it contains a little iron and practically no proteins.

The best preparation that you can possibly give to a breast is to leave it alone.

As to the time when the milk comes, the milk on an average will come seventy-two hours after birth, and about six or seven hours sooner with each succeeding child, so that the twenty-fourth or twenty-sixth child finds milk present at once.

He does not agree with Dr. Van Derslice when he says that milk will come so long as a child will suck well. Has seen milk disappear almost overnight when a child was strong and sucked well. Would not let any child drink longer than eighteen or twenty minutes at the outside, and as soon as it stops nursing, would take it away.

Giving a green vegetable to the mother is a good point, for the reason that the vegetables contain iron, and, therefore, are always good for the mother and the child.

Regarding Dr. Whalen's paper, the physical defects in children have a marked effect upon their mental progress. Over seventy-two per cent of the children that were examined in the schools of New York City were found to be defective in one way or another. The Mental Hygiene Society, which is trying to open

branches throughout the state, would be glad to furnish you some very interesting information regarding the effect that physical defects have upon the mental ability of the child.

Dr. Armstrong said: We are at this time, in my city, agitating the question of cooperative plan; that is, of the employment of a full-time health officer, and doing away with our almost useless Board of Health system and the employment of a full-time medical inspector in the schools; perhaps to add some other duties.

He thought an endorsement of that kind by this Section, perhaps in their report to the House of Delegates, would help us materially.

The Chairman: Dr. Armstrong, the best way to do that would be for you to report your resolution and present it, and if accepted, why, it can be presented to the House of Delegates.

Dr. Harvey, of La Grange: For some years I have made physical examinations of a large number of men, boys and girls, who applied for work in one of our leading industrial establishments, and I have been struck by the large number of remediable defects, especially in the boys, which should have been corrected before they applied for work; that is, before they reached the age of sixteen, as this industry did not take children under the age of sixteen. We never reject those children on account of the defect, but we do not accept them until the defect is corrected. We tell the child what is the matter and send it home to its parents, and if the child cannot explain the nature of the defect to the parent, the parent is privileged to call me up and then I will refer them to their famliy physician. In that way we have had corrected a large number of hernia, have had removed a great number of tonsils and other small defects, and the individual has come back and gone to work and his work has then been uninterrupted, and in this connection I may say that I have been struck by the appalling and the atrocious condition of teeth, both of children and of adults.

Speaking of examination in schools, up to last year we had no physical examinations in the public schools, due to the activities of the Christian Scientists. A year ago, however, a fund was collected and the Board permitted a medical man, who was the Health Officer of the village, to make physical examination of the school children. This was paid out of this fund, contributed by the residents of the village. We have done a great deal of good during the past year. We have uncovered a large number of cases of measles and scarlet fever that heretofore were kept under cover, and we have in two instances, I believe, prevented an epidemic among the school children; and in those communities where they cannot have the full-time health officer, I would suggest that they might follow out this plan. Those who are interested get together, raise a fund and hire one of the physicians to make the tri-weekly medical inspection.

CONVALESCENT HOSPITALS — THEIR ECONOMIC VALUE.*

JOHN A. ROBISON, A. M., M. D.,
CHICAGO.
President of the Illinois State Board of Health.

Our country is well supplied with institutions which care for patients incapacitated for a greater or lesser period of time by disease or injuries. We have State hospitals for the insane, feeble-minded and epileptics. We are well supplied with country and municipal hospitals, but there is a dearth in the United States of hospitals for the care of convalescent patients. In Great Britain there are over two hundred and fifty hospitals and homes for convalescents. In the United States I have been able to find a record of only about fifteen such institutions, and none of these receive male patients.

You all know there is an interval which averages about six weeks between the time a patient is discharged from a hospital before the ordinary occupations of life can be resumed. This interval is generally passed by the patient at the home, and an added burden is imposed upon the family before the patient again becomes productive. This means added expense, labor and worry to the families, and in case of indigency a great loss to the community.

For several years it has been my privilege to be the President of the Medical Staff of the Tribune Convalescent Hospital at Algonquin, Illinois, where in conjunction with an outing camp fifteen hundred women and children are given rest, recreation, good nursing and diet; and such as are ailing medical attention. The value of this work has so impressed me that today I am making a plea for the establishing of more such institutions, and a *special* plea for such institutions for men. If our charitably disposed wealthy people could be prevailed upon to divert some of their wealth to such institutions, it would place hundreds of families on a self-sustaining basis, and would result in a great economic gain to the commonwealth. It is difficult to estimate the gain, but when it costs about $25,000 to kill each soldier in the present European war, what a blessing it would be to spend an infinitesimal amount on the conservation of human life.

Our general hospitals have already broadened

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

their work by establishing a social service, following their patients to their homes, but what a grand field lies before us in lessening human suffering by cutting short the period of convalescence.

Such institutions should be in the country, where there is change of scene, fresh air and sunshine, sanitary surroundings, an abundance of good milk and other food, and quiet. Such institutions would be of incalculable advantage in teaching people how to avoid disease and prepare for the future battles of life.

Convalescent hospitals could have in connection with them industrial plants, where light occupations would relieve the tedium of convalescence, and assist in support of the families.

I urge the medical profession to interest themselves in this class of hospitals and assist in their establishment.

DISCUSSION.

Dr. J. W. Pettit, of Ottawa, said that most of the hospitals and our best hospitals are in the city. It is only a very short time since the people had to go to the cities in order to get hospital privileges, but during the last very few years, especially in the last fifteen years, in this state, there is hardly a town of 5,000 inhabitants or more that hasn't its hospital.

Certain requisites of a good hospital are in its environment, and we are recognizing more and more that the place for a hospital is in the country, and not in the city. The hospital in the country can be run and give the same accommodations in every respect except possibly medical and surgical, for one-half what can be done in the city, or what is done in the city.

If the physicians in the city who recognize this need would send their convalescents to the small hospitals in the country, it would be a very good substitute, at least, though special hospitals could be built with profit.

The people in the country villages and towns object seriously to going to the city hospital, because of its environment, of the unusual and strange things that they have to put up with when they are there; and I believe that if they were not kept so long, if they were sent home sooner, that we could get our patients to go to the city hospitals much more easily.

Dr. Breakstone said there is no question but that there is as much need of a convalescent hospital in the prevention of disease as there is for any other measure. The histories of the people who have filled the tuberculosis hospitals everywhere show they were sent home too soon after an illness in a public hospital. They had to go to work, and in going to work when their health was below par they had contracted tuberculosis.

I think we ought to be very thankful to Dr. Drake for his paper, and I am especially glad of the statements that there would be a full-time paid man in every county looking to the prevention of disease.

Lots of money is spent to prevent business loss, and we pay for it. Very little money is spent to preserve the health of our people. I believe the public would pay for it if we would only educate them to it.

In my paper I have not attempted to give any remedies, but do believe that the Board of Health would be the proper people, not only to regulate colleges, but also to inspect and supervise hospitals, nursing schools, and everything else that pertains to medical education, because they would have no interest in labeling one a Class "A" and the other a Class "C" institution.

Dr. Martin Ritter, of Chicago: In answer to Dr. Petit's remarks about the country hospital, he took the position that a convalescent patient in a city hospital encounters many more difficulties on going out in the country to convalesce there. He believes that every city and every municipality is able to establish within its own limits institutions where a patient can convalesce; for those who can pay, paying institutions, and those who cannot pay must be provided for by the county and by the municipality.

It would be absolutely a criminal charge against physicians, as well as hospital authorities, to send people out subject to having tuberculosis following in the wake of an operation requiring two or three weeks, leaving the patient in a weak frame of mind, physically as well as mentally.

Dr. John Dill Robertson found the paper read by Dr. Drake—the comprehensive program, not contemplative, but actually accomplished—a surprise that so much had been done. Few, if any, of us knew of the large program and the great step forward Illinois has taken in her medical legislation, and without this legislation progress could not be made.

The Health Department of Chicago has fifteen inspectors in the field who are doing inspection work. They could also do other work, if it were properly arranged. They have automobiles for traveling from farm to farm and when they were doing the milk inspecting or inspecting the farm, they could likewise do other work in those counties, but they have no authority in those counties. They have no right to do anything except to show up a particular farmer's milk that does not come up to their regulation. They cannot stop any insanitary conditions that they may find. If this could be done by the state in every county in the state, see that every farm in the state could be inspected and whether the milk was proper or not, this would be great progress.

I think Dr. Drake is too modest. He should have taken a great deal of the credit for this program to himself. By saying that I do not want to take away anything from the president of the State Board of Health, who has his back turned, or of other members, because they have all worked together for this comprehensive program. I think the state of Illinois is to be congratulated and the State Board of Health

is to be congratulated. Mr. Chairman, if it is proper and not out of order, I would like to move a vote of thanks to the State Board of Health for the accomplishment of this wonderful work in legislation.

Motion seconded. Motion declared unanimously carried by the chairman.

M. W. Snell, chairman, in continuation of remarks started by Dr. Robertson, of Chicago, in which he said that Dr. Drake was entirely too modest about this, stated that he was in Springfield many times during the session of the legislature in which this was all accomplished, laboring with senators and representatives from his district, and he knows that Dr. Drake was on the job twenty-four hours almost out of every day.

PUBLIC HEALTH LEGISLATION — RECENT AND CONTEMPLATED.*

C. ST. CLAIR DRAKE, M. D.
Secretary Illinois State Board of Health.
SPRINGFIELD, ILL.

At this meeting of the Illinois State Medical Society, I am asked to present papers on two subjects. At this session I am expected to talk on "Public Health Legislation—Recent and Contemplated." At another session I am supposed to talk on "Medical Legislation—Recent and Contemplated." The fact that the State Medical Society should receive my remarks on these two subjects, rather than a single paper reviewing and forecasting legislation which is of interest to the State Board of Health, indicates that we are all of one mind in regard to the work of the Board for the future. It means that we all feel that the purely public health activities of the Board shall be definitely separated frem those functions which have to do with medical examination and licensure and the enforcement of the medical practice act.

It is hardly necessary for me to review the various duties now imposed upon the State Board of Health by the law originally creating the Board; by the amendments to that act which have been passed since 1876 and by the special laws which have been enacted and whose enforcement the Board has been obligated to carry out. It is enough to say that, in addition to many duties of special character, the Illinois State Board of Health is a combined public health and medical licensing body.

In years gone by,—at the time the original act was passed—such a combination of duties was practicable. The control of the public health amounted to but little more than meeting emergencies;—the quarantine of persons suffering from dangerously communicable diseases and the control of epidemics after they had developed. Preventive medicine,—as we now understand it,—was quite undeveloped forty years ago.

At that time, a state health department was not unlike a fire department. Except in case of "fire," the department was largely in a condition of watchful expectancy and might just as well be engaged in the examination and licensure of physicians and in the enforcement of the medical practice act as anything else. I am not saying this of the condition of public health administration in Illinois particularly; but of the conception of public health administration the world over.

As a matter of fact, public health work in Illinois at that time was relatively at a very high tide. Under the guidance of Dr. John H. Rauch and his able assistant, Dr. Frank W. Reilly, Illinois stood in the forefront in sanitary and public health affairs; but it must be recalled that in 1876 our knowledge of the cause and prevention of communicable diseases was very meagre indeed.

So it was perfectly consistent that the State Health Department should be charged with various and sundry duties more or less intimately connected with sanitation or with the medical profession.

Gradually, however, our knowledge of disease prevention increased. Gradually we came to understand that the time to handle an epidemic was before the epidemic occurred. Gradually we appreciated that activity in prevention of disease was infinitely more important than the suppression of disease. And today we realize that the work of a State Health Department must continue with unabated activity throughout 365 days in the year.

In the meantime the work of examination and registration was enormously increased until it was found that, with appropriations always too low and with clerical services always inadequate, the duties in connection with the medical practice act occupied almost three-fourths of the time of the officers and employes of the State Board of Health.

Examinations had to be held. Examination papers had to be graded. Medical schools had to be inspected. Medical registration required ac-

*Read before the Public Health Section sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

curate service. The medical practice act had to be enforced. And these things had to be done at certain definite times. Constructive public health work,—the education of the people,—the prevention of preventable disease by a broad policy of publicity,—could receive only such attention and such time as could be spared from the medical and registration functions.

Such, frankly, has been the condition in the Illinois State Board of Health throughout a number of years. The Board, created originally as a public health organization, has been compelled to expend its energies upon functions which have only a remote connection with the public health.

There was some talk a few years ago of remedying this condition by the creation of an entirely independent board of medical licensure and, for a time, it seemed likely that this would be done. The rapidly growing tendency of recent years, however, has been to centralize and concentrate administrative power and the more progressive states have set the example in abolishing many boards and bureaus and combining their functions under single heads. In Illinois, the boards in charge of the various State charitable institutions,—made up of scores of persons,—have been done away with and the State charities have been placed under the responsible charge of the State Board of Administration. With this change in policy, looking toward greater administrative efficiency, the creation of a state board of medical examiners is quite out of step with the times and would doubtless be regarded as wholly impracticable. This, however, does not alter the fact that the two major functions now performed by the State Board of Health should be separated. The manner of separation which seems most logical at this time is the continuance of a State Board of Health, but with a distinct division, under that Board, into departments of public health and of medical examination and licensure. This separation will be dwelt upon more in detail in my remarks upon prospective medical legislation. I suggest it at this time merely in connection with the general proposition that, while not imperative in times past, such a separation is a matter of grave necessity at the present time.

And so, in the remarks I am to make to this section, I am considering the State Board of Health purely as a public health organization. As an examining and licensing body, I shall discuss it elsewhere.

As I have stated, Illinois under Dr. Rauch, forty years ago, stood in advance of most of the States of the Union in public health administration. During succeeding years, it appears that Illinois lost her position of supremacy and other progressive states forged their way ahead of us. Critics have said that Illinois retrograded. This is not true. Illinois stood still in a day of very rapid progress in the science of preventive medicine. For some reason, it seemed impossible to secure the enactment of those laws which are absolutely basic and fundamental, such, for example, as a law for the registration of births and deaths.

If these remarks on Recent Public Health Legislation had been written five years ago or even two years ago, they might have been brief indeed. The Forty-ninth General Assembly, however, did much to restore to Illinois her old-time prestige in sanitary and public health affairs. Some one has said, and with a great deal of truth, that the laws passed by the last legislature set the State a quarter of a century forward.

No single session has ever left behind it such a record as this:

1. A birth and death law which will place Illinois in the registration area as defined by the United States Bureau of the Census, and which will form the foundation for constructive public health work;

2. A law for the prevention of blindness from infections arising at birth;

3. A law providing for the creation of county tuberculosis sanatoria and for the establishment of tuberculosis dispensaries and the employment of tuberculosis visiting nurses;

4. A law prohibiting the dumping of tuberculosis cattle into the State;

5. A law authorizing the levying of a special tax by municipalities for the purpose of garbage collection and disposal;

6. A law providing for the establishment of standards and for the supervision of school sanitation;

7. Increases in apropriations permitting: (a) The extension of the sanitary service; (b) The establishment of a bureau of sanitary engineering; (c) The establishment of a bureau of communicable diseases headed by a State epidemiologist; (d) The employment for the first time in Illinois of full-time medical health officers; (e) The extension of the diagnostic laboratory service by the

establishment of branch laboratories in the north, south and east sections of the State, and, (f) The extension of service in the free distribution of vaccines, sera and other prophylactic agents.

In fact, the number and importance of the laws enacted were such that the changes were, in some ways, almost revolutionary. A report on State Public Health Work, prepared for the American Medical Association by Dr. Charles V. Chapin, the section devoted to Illinois, devoted largely to pointing out basic defects in Illinois health administration and written in March, 1915, required additional notes, before publication in the autumn, stating that those criticisms based upon inadequate laws had been very largely nullified by the action of the last General Assembly.

For some reason, the members of the last legislature were unusually friendly to the medical profession and manifested the greatest readiness to support all sound measures for public health development. To this fact, in large extent, must be attributed the success of the year. Credit must also be given to the devotion and the activity of the chairman of the Legislative Committee of the State Medical Society, who worked untiringly throughout the session and who won the confidence and friendship of the majority of the members of the House and Senate.

In but one instance did the Forty-ninth General Assembly pass a law which could bring forth the slightest criticism from physicians and, in that case, there is much to be said on the other side. From the very beginning, the so-called "Optometry Bill" bore the earmarks of a successful career, and its passage occasioned little surprise to those who were in close touch with affairs in Springfield. The optometrists conducted a forceful and intelligent campaign and were well represented throughout the entire session, and many members who could always be counted upon to support sound medical legislation voted for the optometry bill.

These men pointed out at the time that the courts have held that the practice of optometry is in no sense the practice of medicine and that, on that account, such practice has been in no way regulated by law, and they point out now, since the law has been in effect, that more than 500 incompetent spectacle venders have already been put out of business.

More important, however, was the fact that the members who were friendly to the medical profession had little reason to assume that opposition to the bill came from the profession as a whole. There was relatively little opposition from physicians. In fact, there is abundant proof that twice as many medical men took occasion to write or telegraph in support of the bill as there were those who took the trouble to oppose it.

And so the Forty-ninth General Assembly left behind it a record of maximum good legislation and a minimum of bad legislation. Let us consider for a few moments what these recent health laws are in actual application and what bearing they have upon the development of public health administration in Illinois in the future. It will be seen that the laws already passed fit splendidly into a constructive program for the necessary reorganization in times to come.

In a plan of health organization submitted to the State Economy and Efficiency Commission in 1914 by the Board, the State Board of Health was to divide its functions between two major departments; one a Department of Public Health and the other a Department of Medical Registration. An executive officer, serving as secretary of the Board, would have general supervision over the two departments; but the departments would be quite independent of each other and each would have its own immediate head, responsible directly to the Board.

While this separation of the major divisions of the Board is absolutely essential, there are very definite administrative advantages in keeping them united under a single Board and with more or less closely related offices. In this way a duplication of expensive machinery is avoided; statistical facilities may be utilized jointly and other means of activity may be employed by the several departments together with greater economy and with greater efficiency.

In a more recently conceived plan of reorganization, the functions of the State Board of Health are divided among three major departments: (1) A department of public health, (2) A department of food inspection, and (3) A department of medical registration. Each of these departments will be presided over by a commissioner or director, each independent of the other and each responsible only to the State Board of Health and the Governor.

These departments in turn are subdivided into bureaus and each of these bureaus will be conducted under the immediate supervision of com-

petent chiefs, experts in their particular fields. A special bureau, known as the General Service Bureau, will be maintained under the direction of the secretary of the Board, and will embrace two divisions,—one a Purchasing and Auditing Division, and the other a Division of Publicity and Education,—the services of which will be available to all three departments. This arrangement is in the interest of economy and efficiency.

The new plan contemplates a State Board of Health organized much as at present with only slightly different powers, but it implies radical changes in the powers and duties of the secretary of the Board.

At the present time, the secretary is the executive officer of the Board, and upon him rests full responsibility for the discharge of the duties imposed on the Board, when the Board is not in session. The new plan removes executive authority from the secretary and places it on the Commissioners of the three departments according to the functions of the department over which each presides. The duties of the secretary become purely clerical in character.

Before the members of this section it is appropriate that discussion be more confined to the proposed organization of the public health service.

The Health Department, you will note, is divided into five major bureaus, and the bureaus in turn are divided into divisions. The functions of each of these bureaus and divisions are fairly well indicated by the titles they bear.

The present organization of the Board embraces in a more or less complete way, chiefly less, the major portion of the service which will be rendered by the proposed new organization, but the present need is a more definite organization and an expansion in every field under the immediate supervision of expert directors.

The last General Assembly gave us a start in the right direction; it is hoped the next legislative session will witness the completion of the work.

A first step in the direction of child hygiene was made by the last General Assembly in the enactment of a law providing for sanitary supervision of schoolhouses and the establishment of sanitary standards to be set forth by the State Board of Health, the State Architect, the State Fire Marshal co-operating with the State Superintendent of Public Instruction. This law, however, is only a step. It deals with lighting, ventilation and certain other general points in connection with the physical equipment of the school; but does not go far in the actual control of public health.

In the proposed plan for reorganization of the State Board of Health, the child receives serious consideration and there are contemplated divisions of School Inspection and of Infant Welfare.

By increased appropriations, the Board has been enabled to create during the past year a line of activity which the State has sorely needed,—a Bureau of Sanitary Engineering,—and this Bureau has already manifested its usefulness in meeting a number of serious sanitary problems in the State. While this Bureau will render excellent service from this time on, it is very desirable that the State laws be so amended that the State Board of Health will have complete supervision over all new and existing installations of public water supplies and sewerage; the operation of water and sewage treatment works; the sanitation of schoolhouses; the sanitation of common carriers, and it is also very important that the appropriations for the Bureau be such that its working force may be augmented and its activities extended.

With the exception of the Birth and Death Act,—which is absolutely basic and fundamental,—perhaps no single feature in recent legislation is more important than provision for the employment of full-time, district health officers. The appropriation for this purpose is small; but it has permitted the division of the State into five sanitary districts and the employment of an epidemiologist and of four medical health officers.

The epidemiologist is serving as chief medical inspector and his field extends generally over the State. The district health officers must give their entire time to public health work; they are physicians and they have secured their appointments only after rigid tests of their sanitary knowledge. The District Health Officer is charged with the health conditions of his district and must not only meet such emergencies as may arise, but must constantly carry on a campaign of popular education. One of his most important duties is to keep in close contact with the municipal health officers in his district; to hold conferences and schools of instruction for health officers and to bring these local officials into close contact with the State Board of Health.

The quarterly health officers' schools will be

supplemented each year by a state-wide school of health instruction in which the health officers of the municipalities in all of the districts of the State will be brought together.

The establishment of this district health officer service has paved the way for broad extension of similar activity. It is quite likely that, during the next session of the General Assembly, several officers may be added and the State redistricted into smaller areas making more intensive work possible.

The ultimate aim of this movement, however, is the establishment of county health officer service,—a full-time medical health officer in every county in Illinois,—and it may be said definitely that public health work in the State will never reach a high enough efficiency until such county officers are employed.

To make this county service efficient, the officer should be selected purely upon his merit. If not by civil service, there should be a provision that the appointment and removal of the county officer shall be subject to the approval of the State Board of Health.

There is one other essential feature of public health supervision which, under present conditions, must be very unsatisfactory, and there is one important department which must be developed in the State Board of Health before that organization can give to the public the full measure of service. This department is that of Food Inspection.

At the present time, as you are doubtless aware, food inspection is carried out in Illinois largely by the State Food Commissioner, while the State Board of Health engages only in a rather limited supervision of milk production.

Food inspection is important for two very different reasons. One is that the food of the people may be safe for general consumption. The other is that the food of the people shall be unadulterated and shall be what it is purported to be by the dealer and the manufacturer. One is an essential public health matter. The other is essentially commercial and has largely to do with mere commercial honesty.

Illinois is one of the great food producing States in the Nation and yet, for some reason, the commercial side of food inspection is given the accent, while the public health side is singularly neglected.

While the State Board of Health, within the past few years, has done considerable work in the inspection of dairies and in the supervision of milk production, the limited appropriations have made this important branch of activity wholly inadequate.

As a matter of fact, the State should control all milk production in territory outside the jurisdiction of the individual municipalities, which means that State supervision should cover practically all milk production in the State. Relatively few dairies are located within the corporate limits of cities and, consequently, the cities cannot effectively supervise them.

It is true that the municipality may prevent the sale of milk from a filthy dairy within its corporate limits; but, if sale is prohibited by one city, there is nothing to prevent the owner of the filthy dairy disposing of his polluted product in other nearby cities. The increasing facilities of transportation make this a far simpler matter for the dairyman who prefers to seek new markets rather than to adopt sanitary dairy methods.

A situation of this kind can only be remedied by state legislation and state supervision, and my experience is that those communities which now are maintaining a dairy inspection service at great expense and with varying degrees of effectiveness will be glad indeed to have the state relieve them of a difficult task. Certainly the state owes it to its smaller communities,—those which by reason of limited funds are unable to maintain a protective service,—to see that they are properly safeguarded and that they shall not suffer unduly by reason of the better fortune of a neighboring city.

In conclusion, I wish to say that the Board not only appreciates this opportunity to direct your attention to recent legislation which must be of interest to all of you, but more especially is it pleased to be afforded an opportunity to lay before you the pressing needs of the health service of the State and to outline plans for meeting these needs.

It is deemed good judgment to lay these matters before you now and invite your full and free discussion, rather than to wait until such time as they may become subjects for consideration by the legislature. It is better that we should thrash out our differences now and among ourselves, than to wait until the General Assembly convenes and do so before the legislative body of the State. Success in medical and sanitary legislation de-

pends very largely upon unanimity of opinion and action on the part of those seeking such legislation.

THE HEALTH DEPARTMENT UNDER COMMISSION FORM OF GOVERNMENT.*

F. C. VANDERVORT, M. D.,
BLOOMINGTON, ILL.

For the benefit of those not familiar with this form of government, I will briefly explain it. Under a recent law enacted in Illinois, any city of certain population may adopt the commission form by vote of the people. In the spring of 1915, Bloomington voted the adoption of said form. The Commission consists of four Commissioners and a Mayor, elected under a plan that entirely eliminates party politics. For instance, any citizen, white or black, male or female may announce himself as a candidate for either office and submit his chance to a vote of the people at a primary. In Bloomington there were nearly fifty candidates announced themselves, four or five for Mayor and some 57 varieties for Commissioner. When the votes were counted, the two having highest vote for Mayor were declared to be the candidates for Mayor, the eight highest on list for Commissioner nomination, were declared to be candidates for Commissioner. At the election, the one receiving the highest vote for mayor was elected to that office. The four highest for Commissioner were elected Commissioners. The first Monday in May, the new Mayor and Commissioners were installed, as the City Council. They agreed among themselves as to manner of division of labor, as the officers put in their whole time, a very different plan from the old aldermanic plan.

One is Commissioner of Finance.

One is Commissioner of Street and Public Improvements.

One is Commissioner of Public Property.

and one Commissioner of "Public Health and Safety." It is in regard to the work of the latter Commissioner that I shall confine myself. We had been having a Medical Health Officer on a small salary with a sanitary policeman under the old regime. The ordinance was revised conferring all the powers of the Medical Health Officer upon the Board of Health, which is composed of the Commissioner of Health, President; the Sanitary Policeman, Secretary, and three physicians, who constitute a majority and have absolute authority on all matters pertaining to health and hygiene. So far, the Medical Staff of the Board have acted as a unit and the work has run very smoothly. At our first regular meeting, we adopted the new rules adopted by the State Board of Health in February, 1915, and established quarantine according to these new rules of the State Board. We follow the rules and instructions of the State Board, to the letter, and the addition of all contagious and infectious disease to the quarantine list has greatly increased the work of the local boards. We first issued an official circular to the physicians of the city, calling their attention to the rules, a copy of which follows immediately:

Bloomington, Ill., May 27, 1916.

The Local Board of Health wish to call your attention to the new ruling of the State Board of Health of February 16, 1915, in regard to communicable diseases.

CLASS 1.

Must be quarantined and placarded:

Smallpox	Cerebrospinal fever.
Scarlet fever	Meningitis (epidemic)
Scarlatina	Asiatic cholera
Diphtheria	Bubonic plague
Membranous croup	Leprosy
Chickenpox	Typhus fever
Measles	Yellow fever
Whooping cough	Rocky Mountain spotted fever
Poliomyelitis (acute inf.)	

CLASS 2.

Typhoid fever	Ophthalmia neonatorum
Paratyphoid fever	Trachoma
Dysentery—amebic	Pellagra
Dysentery—bacillary	Puerperal fever
German measles	Rabies (hydrophobia)
Mumps	Tetanus
Septic sore throat	Glanders
Malaria	Anthrax
"Continued fever"	Trichinosis
Hookworm disease	Actinomycosis
Tuberculosis	

We are compelled by law to enforce these rules, or suffer a penalty.

Your attention is respectfully called to the accompanying circular issued by the state, and your hearty cooperation for the enforcement of the same is desired and expected. Please send all reports to Commissioner A. G. Erickson, City Hall.

F. H. GODFREY, M. D.,
F. C. VANDERVORT, M. D.,
H. H. GRIFFIN, M. D.,
Local Board of Health.

On the whole the co-operation of the medical profession has been hearty. The new rules for quarantine of diseases of the milder form or of second class are harder to enforce than the graver contagious diseases. We have more trouble with whooping cough than any other disease. We find

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

that many people whose children have the latter disease never call a physician and hence the cases are never reported to the Health Department. We have met with most hearty co-operation from the school authorities and all children of either class are excluded from the school by the teachers. Before children can return to school, we require them to secure a certificate of health from one of the Medical Board. The following certificate is printed in book form and all the doctor has to do is to examine the pupil and fill in the name and date and sign his name:

Bloomington, Ill., ..., 19.....

This certifies that ....., pupil in a city school, is now free from all contagious or infectious disease and is entitled to re-enter school.

BOARD OF HEALTH,
Per .....

A. G. Erickson,
Commissioner of Health.
F. H. Godfrey, M. D.
F. C. Vandervort, M. D.
H. H. Griffin, M. D.

The following notice printed and framed is hung in each school and copy thereof handed to member of family having any contagious disease:

Notice of Parents of Children Attending This School.

After convalescence from any contagion, parents must secure a certificate of health from the local board of health before the pupils present themselves for re-entering school.

No charge for certificate.

A. G. Erickson, Commissioner of Health.
F. H. Godfrey, M. D.
F. C. Vandervort, M. D.
H. H. Griffin, M. D.

W. T. Williams,
Sanitary Officer.

* * *

I understand some objection is offered to the above rule by the physicians, but none by the parents. We find it absolutely necessary to protect the schools to enforce this rule. At the very beginning of our work, as a Health Board, we found children attending school, suffering from contagious diseases, having in their possession certificates of health from the attending physician. The full time Health Officer, is of course, the ideal executive, but the question of revenue is an important factor. Most cities are now taxed to the legal limit and not enough money is furnished to properly equip the Health Department. Experts say it should require a 2 per cent tax to furnish a sufficient amount of revenue. Bloomington has not, at present, the wherewith to hire a full time medical health officer and it is in the same condition as most cities of its size. Our plan would be ideal if the Commissioner of Health and Safety were a medical man. This is a possible accomplishment under the Commission Form of Government. Suppose a doctor submits his name to the voters as Commissioner. If he is elected there is no doubt but this particular department would fall to his lot. Under these conditions, we would then have a full time medical commissioner. Our claim is that a layman, as executive, may be just as efficient, if he is properly advised by a medical board of health. The recent legislature amended the Medical Practice act so that Illinois will now again come to the front in the matter of its health regulations. The State has been divided into five districts, each to have a full time District Health Officer whose duties are to supervise health matters in his district. His duties are to be educational, advisory and executive. It is not necessary for every city and town to have a laboratory of its own, while the State has an efficient one where all examinations can be made and a report received by telephone in a very short time. In the large cities, of course, it is necessary to have laboratories. As a Board of Health, we really are a branch of the State service, which has absolute control of all health matters in all localities in the State. The aim of any Health Department is to secure the co-operation of the people in the enforcement of the laws. The two hardest things to do are to get the people to keep their premises clean and to assist in maintaining a proper quarantine in cases of contagious diseases. In many cases the most difficulty is had with the people of the better class, not the slum class. Here is where the plan of educating the people comes in and this can be accomplished by constant dinging into the ears of the public through the press, pulpit, school, civic leagues, women clubs, etc. The campaign against the fly is now on. We have received three thousand copies of the state fly circular from the State Board of Health and these circulars were put into every home by school children under the supervision of the superintendent of schools, the teachers each giving a talk to their schools on the subject so as impress the lessons taught by the circular upon their minds, and to impress upon them the importance of the instructions conveyed by the circular. The ministers of the different churches were also requested to call the attention of their congregations to the subject of cleanliness and fly swatting.

I will close with a letter from the Secretary of the State Board of Health, followed by instructions to District Health Officers.

Springfield, April 3, 1916.

DEAR DOCTOR VANDERVORT:

The reorganization of the State Health service is being accomplished under the general powers granted

the State Board of Health in the act creating the board.

A part of this plan of reorganization calls for a Bureau of Communicable Diseases, the directing head of which shall be an epidemiologist and the field force immediately under the charge of this director shall at first consist of four District Health Officers.

The duties of these District Health Officers are set forth in the pages of the accompanying copy of our *Illinois Health News*. For the purpose of administration the State has been divided into five sanitary districts, four in charge of district health officers, the fifth to be under the care of the Epidemiologist for the present. These districts have been mapped out with a view to equal distribution of population and accessibility from a central point where the District Health Officer must reside.

As a further step in the direction of developing an efficient state health service, we shall ask the next General Assembly to enact legislation creating full time County Medical Officers for each county having more than 50,000 population, and for groups of adjoining counties where the aggregate or combined population will not be greater than 50,000.

We believe we can show the legislators that this plan of organization will not only provide their constituents with a degree of protection which they have not hitherto enjoyed but that it will be a saving of many thousands of dollars which now are expended with little or no results. To the municipalities now maintaining a fairly efficient health service it will result in a material lessening of the burdens which now are inflicted upon them through lack of proper precautions in the surrounding rural district.

* * *

Copy of letter sent to District Health Officers:

DEAR DOCTOR: With the reorganization of the medical inspection service it shall be the aim of the Board to keep in closer touch than heretofore with the local health authorities and with communicable disease conditions as they may exist in various parts of the state.

The duties, in general, of District Health Officers will be to enforce the rules, regulations and orders of the State Board of Health, to decide all questions of disputed diagnosis, to instruct and assist local health authorities and registrars of births and deaths in the performance of their duties, to conduct active educational health campaigns and to hold lectures with health officers and with organizations interested in public health work. In times of floods or other disasters they will organize and direct emergency medical relief.

Whenever, in the opinion of a District Health Officer the situation requires that local health authorities be temporarily superseded, he shall so report to the secretary without delay.

All assignments for inspection and investigation will be made by the secretary and all resquests for the services of District Health Officers should be referred to him. If, however, in the opinion of the District Health Officer, an emergency should exist, the call should be responded to at once and this office notified. Authority to act will then be forwarded to him. The assignment blanks which accompany each assignment should be filled out by the District Health Officers and returned with their expense account. A separate report in writing on each investigation, inspection or assignment must be promptly made to the secretary. A weekly report on health conditions in his district should also be made by each District Health Officer. Such report should contain such recommendations as he may think will improve health conditions in his district.

District Health Officers will keep this office advised at all times of their whereabouts in order that they may be reached as quickly as possible when occasion requires. When filling assignments, they will not confine themselves to diagnosis alone, but will thoroughly acquaint themselves with health conditions, not only in the communities visited, but in the surrounding country.

District Health Officers, when visiting premises on which cases of communicable diseases exist, will take every precaution to prevent the spread of the disease from their visits. This is a matter to which sufficient attention is not always given and the District Health Officers should set an example to those who are guilty of carelessness and disregard of necessary precautions. Attendants and other members of the infected families and local health authorities should be instructed in such precautionary measures and should be urged and directed to observe them.

District Health Officers, whenever visiting any community, should get in touch with the local health authorities and the local physicians, ascertaining whether or not any contagious diseases exist in the community or in the surrounding country. The number of cases of the various communicable diseases should be ascertained and indicated in the inspector's report. The location of the cases should also be indicated. Whenever examinations are made of cases in the country the township in which the patients reside should be indicated in order that this board may get into communication with the local health authorities, if necessary.

District Health Officers should attempt to locate sources of infection and see that proper steps are taken to control the same. They should also see that all exposures are located and handled in accordance with the rules of the Board.

District Health Officers should pay particular attention to instructing local health authorities in their duties, especially with reference to reports of cases to this office and to quarantine. Whenever laxness in the enforcement of the rules of this Board is found, the local health authorities are to be advised that the rules of this Board must be enforced and the local health authorities are not permitted to relax the same.

In all instances the railroad stations and surroundings at the places visited should be inspected, provided, of course, that no inspection has been made of such place within a short time previous. A separate

report on the inspection of each railroad station should be made.

In each locality visited District Health Officers should also take time to interview the local registrar of the district and ascertain facts relating to the enforcement of the new birth and death registration law. For this purpose District Health Officers must thoroughly familiarize themselves with the provisions of the law and shall be prepared to meet inquiries and to advance proper arguments sustaining the new procedure. This is an important new duty of the District Health Officers and it is expected that it shall be discharged in a thoroughly satisfactory and efficient manner.

Reports of such interviews shall be made separate from medical or sanitary reports, and any complaints, requests for information and suggestions for rectification of existing shortcomings should be incorporated therein. This new birth and death registration law is not an experiment, it is not different from exactly similar laws which for many years have been in successful operation in other states; and what can be done in other states surely can be accomplished in Illinois.

District Health Officers must be prepared to advise local health authorities as to proper procedure in prosecutions for violation of the rules for the control of communicable diseases, and should insist upon prosecutions being instituted for all violations in which the circumstances are not so extenuating as to excuse such violations. Whenever violations are found, a full report thereon should be made to this office.

Under the statutes (Chapter 126a, revised statutes) it is made the duty of all officers and employes of the state and of every city, village, county and township to enforce the rules of this Board. The same statute provides a penalty for the violations of the rules of this Board and of a fine not to exceed $200 or imprisonment in the county jail not to exceed six months or both. The penalty being either a fine or imprisonment, or both, it necessitates a preliminary hearing before a magistrate, binding over to the grand jury, indictment and trial in a court of record. This being a process which involves considerable delay, prosecution in cities and villages should be brought under the municipal health ordinance, if the provisions of the same are strong enough to hold the offender; when they are not, the violation, when reported to this office, will be called to the attention of the state's attorney, with the request that he prosecute the offender.

Very truly yours,
C. St. Clair Drake, M. D., Secretary.

* * *

Thus, you will see that the duties of the local Board of Health are made clear, in that they correspond with the state laws and the above instructions show how closely is the state supervising the health departments in the local units.

THE CLASSIFICATION OF MEDICAL INSTITUTIONS AND ITS EFFECTS ON MEDICAL EDUCATION AND THE MEDICAL PROFESSION OF AMERICA.*

Benj. H. Breakstone, B. S., M. D.

Professor of Surgery, Bennett Medical College; Medical Department, Loyola University; Attending Surgeon, Jefferson Park Hospital; Attending Surgeon, Douglas Hospital; Consulting Surgeon, Municipal Tuberculosis Sanitarium.

When our forefathers devised the constitution of the United States, the prime factor was equality.

There is an attempt, however, at the present day to imitate some of the European ideas and to divide everything into class, and this some think is for progress.

If we are to have class, it will close the avenues for new institutions to spring up, and it is new institutions that make for progress. For instance: Years ago in Chicago there was but one medical school, Rush Medical College, and the curriculum consisted of two courses of lectures, of six months each, both of which courses were identical. At the end of this time they graduated and became doctors and practiced medicine throughout the great West. The faculty was composed of sincere and earnest men and many of these graduates have become great physicians and surgeons.

If such a school existed today it would promptly be put out of business. However, if the same school had been allowed to exist as the only school in Chicago, and if it were difficult on account of financial or other reasons to get to any other school, the faculty would have been self-satisfied and would not have progressed to the great institution it is today.

As schools multiplied in Illinois it became apparent that some of the older schools which have already established a reputation were not watched and every now and then students would slip by and graduate without taking the required courses in full, or without reaching the examination marks required. So common was this practice that it became necessary for Illinois to pass a law that all graduates of medical colleges must take an examination by a State Board of Health before they could practice medicine. This law went into effect July 1, 1899, and it then became a check on medical schools and prevented them

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

from graduating their friends and favorites without teaching them sufficient at least to pass a State Board Examination. This board soon recognized the fact that in order to be impartial, it must be composed of doctors who are in no way connected with any teaching institution, and, furthermore, inasmuch as the majority of the members of the board are picked from down state, we are always assured of a fair minded, impartial board. It seems that some of the older and so-called better schools were not satisfied with the board because the results showed that other colleges had the same chance of making good as they.

To prevent this competition, a scheme was recently devised by which medical colleges must be classified so as to induce some weak-kneed state boards not to admit graduates of so-called lesser colleges to the examination. Here I wish to emphasize the fact that it was the so-called lesser colleges that made the other colleges better.

The committee on classification of the American Medical Association is composed almost wholly of men who are directly connected with medical colleges. It is superfluous to state that they represent only class "A" schools, whether these schools are entitled to that distinction or not.

The present classification of medical schools is wholly unfair for the following reasons:

First: That all members are connected with institutions that are to be classified.

Second: That they have a separate standard for Northern and Southern Colleges.

The writer knows well that vast improvements in medical education should be made in this country, but he is of the opinion it will never be done through classification by the methods employed by the present committee.

In order to improve medical education, we must first be able to unite the entire medical profession so that when we appeal to the public there will be no dissenting voice. This can hardly be accomplished through classification by interested men.

Every member of the A. M. A. knows that medical education should be improved, but it should be done on co-operative lines rather than on antagonistic lines. At the present time the effects of classification have been:

First: To create antagonism and discord in the medical profession by class distinction.

Second: That it educates men on theoretic lines rather than practical.

Third: That it drives many worthy but poor students to class "B" and "C" schools.

Fourth: Many able teachers and practitioners are discouraged by constant discrimination.

Fifth: That it increases the number of "other practitioners" who are taking the board everywhere (especially is this true in Illinois).

Let me dilate some: The colleges now are striving not to educate men to become doctors, but to make a showing in the various examining boards and hospital examinations. It is a well known fact that most of the class "A" colleges maintain quiz courses in order that they may get the highest places in the various hospital interne examinations. The men who take these quiz courses are looked upon as the most competent in their respective schools and are excused from most of the clinical and practical work. They are taught to answer questions on paper rather than recognize a lesion when they see it, or to make a diagnosis from clinical symptoms. *A college that maintains a quiz course for the mere purpose of passing examinations is equivalent to a college that gives a course by mail or maintains a correspondence school,* and these graduates are turned loose each year to *get their practical knowledge by experimenting on patients put under their care in the various public hospitals* of this country. In the present cry of humanitarism, this thing should be abolished. I speak largely of Illinois, because I am more acquainted with the situation here. For the past two years or more there has been a movement on foot for the four Illinois universities which maintain medical departments to get together and improve all courses to one standard which shall be agreed upon by all and allowing the student to pick out his course in any one of the four institutions, as is done in Germany and other countries. No one can deny the fairness of this, still the representative of the foremost medical school in Illinoise refused to go into this deal because one certain man in another college was on that committee. Can such a man be sincere in his efforts for the improvement of medical education? Still he is a power in the classification committee of the A. M. A. The havoc wrought by this committee is so intricate and so complex that I

doubt if ten years hence we will be able to undo the harm that has been done thus far by this committee. In all other bodies or professions, improvements and advances are made not to harm the existing members of that certain profession.

To illustrate: I have already stated that a separate standard exists for the South and for the North. The Texas Board of Health has refused to reciprocate with Illinois on account of Illinois having class "C" schools. I am informed on very good authority that none of the schools of Texas can compare with even the "C" schools of Illinois, and yet Illinois graduates who have passed the State Board of Illinois cannot reciprocate with Texas on account of the one or two "C" schools in Illinois, which are as good at least as "B" schools of Texas. Examples of this kind can be multiplied. Along with the classification of the colleges, with no improvement in medical education whatever, in an effort to still further control the student body, a plan for a proposed voluntary Universal Board of Examiners was proposed. This again will be in the hands of the men who are interested in medical schools, and therefore will *undo what the state boards have been trying to do for these many years in giving fair and impartial examination* regardless of where the applicant has received his medical education.

The lesser schools have certainly not been improved for the reason that they do not need to teach anything any more as long as their applicants will make a good showing before the various state boards, and thus several private schools have sprung up that give quiz courses.

It is not necessary for any one to have any education whatever in order to pass a state board, or hospital examination after he takes one of these quiz courses, so that the only thing the committee has accomplished thus far is that the *practical work does not need to count as much as the written examination.*

I fear that if I am to give more details, this paper will become too long, but if we are to improve medical education in this country, we must do the following:

First: We must agree on what should be the preliminary requisite for the entrance to a medical school.

Second: All teachers should be full time paid men. The reason for this is apparent in spite of the fact of the many times that the word "selfish" appears in the Annual Report of the Chairman of Education Committee A. M. A.

No one teaches in any school without direct pay, unless he expects to make money out of the future graduates. Indeed, no one can afford to give it the time it requires. This fact is recognized in other branches of teaching, and also in medical teaching in Europe. There is no reason why all the medical schools of Illinois could not get together in some manner if the committee for medical education is really sincere. The chairman of the committee in his 12th Annual Report said such a thing would be desirable, and no one will disagree with him, but there has not been a sincere effort to accomplish this. While there has been a reduction in the number of graduates in medicine in the last several years, there has been an *alarming increase in the number of osteopaths, chiropractors, and other practitioners* who take the board at every examination.

HOSPITALS.

The same thing is being done by the committee for the classification of hospitals. I have tried to find out from the A. M. A. what a recognized hospital means, but without a satisfactory answer, yet a pamphlet is published which gives a list of recognized hospitals, and in Chicago, to my knowledge, several large and well known hospitals are not on this list, whereas a number of questionable hospitals appear there. What explanation can be made of that I cannot say, but the effect on hospitals is an even more vicious one than the effect on the colleges, for there are hospitals which are unable to obtain internes on this account, and I would not be surprised if there will be a number of legal actions against the A. M. A. for that reason. Hospitals should be encouraged rather than discouraged, and yet the same coterie of men who are classifying the colleges, state boards, hospitals, etc., also fostered a nurses bill that has created a famine of nurses so that the pay of nurses in and out of the hospitals has so increased that many of the smaller hospitals will have to retire or run a non-recognized nurses training school. They have also discredited surgery by the establishment of a so-called "college" of surgeons. The so-called larger hospitals controlled by this same coterie, evade the law by

having internes who are not licensed, and anesthetists, who have never studied medicine.

Why can we not get together and talk these things over at our meetings and not have a group of men go off in a corner and believe that they are the directors chosen by an Almighty God to direct medical affairs without regard to any one else in the medical profession except their own personal friends who are *deemed by them competent?* And why shall they air their partisan views in the lay press to the detriment of the entire profession.

The writer wishes nothing else from this paper except an awakening to the necessity of co-operation in the accomplishment of good for the entire medical profession, for medical education, and for the community at large. In the preparation of this paper the writer has consulted Flexner's Report, The Educational Number, Public Health Number, and State Board Number of the Journal A. M. A., 1916, and Editorial, May, 1916, ILLINOIS MEDICAL JOURNAL, to which articles he respectfully refers any one interested.

DISCUSSION

Dr. Mann, of Elgin, complimented the speaker on "one of the finest papers he had listened to in many a day." In answer to the question, Why can we not get together on this matter? He attributed the trouble to the division of the medical profession into cliques of three, four or five, each one antagonizing the interests of the profession at large by jealousy, by antagonizing each other. Until we do get together, the men who recognize the fact of our disruption are going to take advantage of it and are going to tell us what we have got to do.

Dr. Robertson stated that for nearly twenty years he had been interested in medical education as part owner in a medical school, but that the one he was interested in now belongs to Loyola University, so that he could talk without any selfish interests whatever. He praised the classification of the American Medical Association, because it made us all "get up and scratch." It made us all work for better institutions. It cost him around $100,000 at one time, invested to make a better medical school. For six or seven years he opposed the Illinois State University taking over the Physicians and Surgeons College in every legislature. He wanted to take them all together instead of taking one institution. But now that the state has its school, we, in the state of Illinois, ought to see that the State Medical is made equal to any other medical school in the United States; in other words, we ought to make a Johns Hopkins out of it and get behind and push it along just as fast and as far as we can.. We will have a great practical school, and we think the plans should be after the English plan. There, three years ago, the first and second years were spent in school and the rest of the time in the hospital. They spend three years in hospital and two in school. That made practical men out of them.

We are raising our standards of medical education and at the same time we are permitting other practitioners, chiropractors and others, to come in under the same rights and now they are coming to the state board and want the right to sign death certificates and have them accepted. If you don't get into politics and have something to say about what legislation shall be passed, you will have a few six or seven-year colleges and a large number will be the other practitioners.

Dr. Hemenway has attended the Medical Conference on Medical Education for a number of years, ever since he was sent as a delegate by the American Academy, and has seen the defects. The standard of education has been raised to such a degree that when a man has gone through a Class A school and taken a real good course, he does not feel that he can afford to sit down anywhere except in a live city, where he can get immediate returns on his investment. Secondly, the boy who wants to get into the practice of medicine and does not have the finances to put him through one of those long courses, will take the other one, at the osteopathic school or some other makeshift, and locates in the country some place, with the result that throughout the country in general there is getting to be a lowering of the average standing of physicians.

Courses of university extension, to give them some of the later ideas in medicine which will keep the men in the country abreast of the times somewhat, have not been a great success because there are such a large number of them that have not had their fundamentals. They have been graduated from the cheap, makeshift schools.

The model course for a medical school should be, as Dr. Robinson suggested,—somewhat after the English system,—but the point that I would make is that for the average, ordinary practitioner, the course must not be elaborated too much and that the specialist must have had a primary degree before he goes into his special study.

Dr. A. H. Andrews, of Chicago, approved of a research school for research men, but would have prospective practitioners of medicine taught by successful practitioners. He believes in the idea that medical students must be taught by men who are devoting their whole time to the teaching is a mistake. That the old-time teachers, men who held their positions because of their conspicuous success in their practice of medicine, were an inspiration to the student—an inspiration that a man devoting his whole time to teaching, on a salary, rarely is able to give to his students.

Dr. Frank Deacon stated that the American Medical Association tried to induce the Carnegie fund to try and classify every hospital in the United States, but having started it and investigated the subject primarily, they came to the conclusion that the task was such a colossal one that they could not even begin

it, and it was dropped. The allied organization, the American Hospital Association, at their meeting in St. Paul, about 1914, brought this subject up and the chairman of the committee reported that nothing was to be done in the classification of hospitals; that the hospitals themselves had evinced a desire to do everything they could possibly do within a reasonable time, in bringing up the standard of the hospitals.

If certain hospitals are to be arbitrarily disapproved of, where are there enough hospitals to give internship to the number of graduates that are leaving the colleges? Great stress has been laid on the sincerity of the attempts, and the work which has been done in the classification of the medical colleges. He always thought the classification of anybody or any institution in America was contrary to the spirit which animated this country from the start.

The fact that this classification is leading to a reduction in medical students and, therefore, to the establishment of a more aristocratic standard in the medical profession, is not, by any means, an unmixed blessing. If this country should get into war with any of the great powers, we would be in exactly the same position as Great Britain is now, France, and other countries, where they are very willing to come over here and take American physicians to go to the front in Europe and give them a commission ranging anywhere from first lieutenant up to major.

Dr. Breakstone: It is necessary to have people who are not interested do the classification. As regards the University of Illinois, I have been down to Springfield before the legislature also, I believe that all education should be the function of the state, because then and then only will we have the proper equipment and be able to hire the proper men to educate. I was never in favor of spending a half-million dollars on the P. & S. nor any other existing school, but I wanted to see Illinois take $5,000,000 and build a brand-new school—one that the whole country could be proud of.

I know a man in Chicago who holds clinics in some large hospitals, but they will not let him teach in a Class A school, because he happens to be a graduate of a Class B school years ago, when he did not know. Now that is a thing I object to. It is not always the school that makes the man. The fact is, in these schools where they teach every man to be a specialist,—really, the whole curriculum of the Class A school seems to be calculated to make every student a specialist in every one of the branches,—it drives many of those poor boys crazy. It does, and I know some of them who have gone crazy. We are trying to make professors of them. We are trying to make professors rather than practitioners of them, and I believe in the old way of giving the student some experience in the outside world. You take a Class A man: he goes to a high school, to a university, the medical school and then the internship, and then goes to Europe, and then he has not seen any of the world; he does not know men. All that he knows is school, and he thinks it is the same in the outside world as it is in the school. He does not know anything about the slums. You take him away from the hospital and he does not know how to practice medicine. I believe it is all right to have good and better schools, but for the better schools to say that they only shall exist and try to induce the boards of health to license their people and no one else, that is the wrong idea, because the better schools will soon deteriorate for want of comparison. We do not condemn the efforts for the improvements of the medical education at all. We want to improve it, but on lines that will really do the public good. I would rather, when on my sick bed, call on an old country practitioner to treat me than a graduate from a Class A double-plus school.

AN EPIDEMIC OF TYPHOID FEVER DUE TO THE USE OF A POLLUTED WATER SUPPLY AT THE 1915 ASSEMBLY OF OLD SALEM CHAUTAUQUA.*

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URBANA, ILL.

There resulted from the use of a polluted water supply at the 1915 assembly of the Old Salem Chautauqua a large epidemic of typhoid fever, which, though presenting nothing new from an epidemiological standpoint, serves to emphasize the danger of incurring typhoid fever infection at summer camps and picnic grounds where insanitary conditions are allowed to prevail and adequate attention is not given to the quality of the water supply. Sanitarians have realized that there is a tendency for persons to more or less abandon sanitary precautions while camping or on summer vacations to the country, and much has, therefore, been written on this subject warning people of the dangers involved. However, owing to the coming and going of vacationists and the scattered location of their homes it has generally proven difficult to obtain data on any large outbreak coming from a summer camp. In the Old Salem Chautauqua epidemic we have a striking example of such an outbreak, and it should serve as a warning to vacationists and to the management of summer resorts.

DESCRIPTION OF OLD SALEM CHAUTAUQUA GROUNDS

The Old Salem Chautauqua grounds, comprising about 60 acres, are located in Menard County about a mile south of Petersburg. (Fig. 1).

*Read before the Public Health Section, sixty-sixth annual meeting of the Illinois State Medical Society, at Champaign, May 17, 1916.

The Sangamon River, flowing in a northerly direction, forms the western boundary. The topography of the grounds is very pronounced with the exception of the northern part, where it is very flat and subject to overflow at high stages of the Sangamon River. Chautauqua assemblies have been held since 1897, and there have been constructed in this time many buildings, including an auditorium, hotel, bathhouse, memorial and society buildings, and slightly over one hundred private cottages. The cottages are occupied by the owners and their friends during the assemblies and in addition many tents are erected to accommodate other campers. The Old Salem Chautauqua assemblies have been remarkably good, and have gained a widespread reputation. This is shown by the fact that in 1905, 4,000 people, coming from 33 states and territories and five foreign countries, lived on the grounds. Due to the advent of traveling chautauquas the attendance has fallen off of late years, and the estimated daily attendance during the 1915 assembly varied between 500 and 3,000.

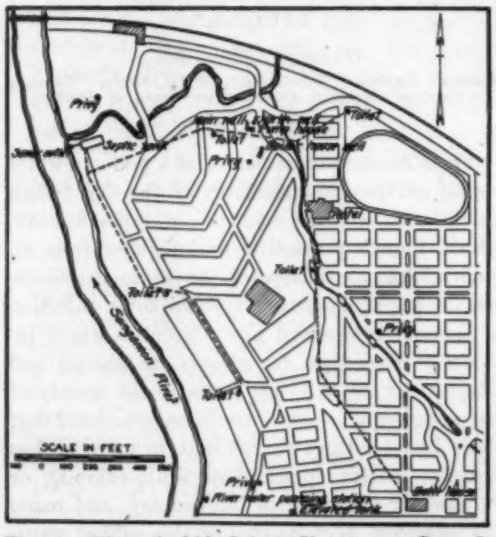

Fig. 1. Plat of Old Salem Chautauqua Grounds, Showing Waterworks and Sewer Systems.

In the early days of the Chautauqua, public water supply and sewerage systems were installed. The sewer system covers the grounds fairly completely and the sewage, after passing through a septic tank is discharged into the Sangamon River at the northwest corner of the grounds.

OLD SALEM CHAUTAUQUA WATER SUPPLY

There are two separate sources of water supply, namely, a supply from wells for domestic use, and a supply from the Sangamon River for the bathhouse, for flushing purposes, and for use in the hotel kitchen. Polluted river water might well have caused typhoid, especially as used in a swimming pool at the bathhouse (Fig. 2), but since there is no evidence that such was the case the river water supply will not be dwelt on here. It may be noted in passing, however, that a few cross-connections between the river water and well supplies controlled by single valves existed in a few cottages.

Fig. 2. Interior of Bathhouse and Swimming Pool, Old Salem Chautauqua Grounds.

Fig. 3. Waterworks, Old Salem Chautauqua Grounds.

The domestic supply is obtained from three dug wells located on the low land at the northern end of the grounds (Figs. 3 and 4). One of these wells, which furnishes most of the water, is designated the main well, and the other two

the north well and boiler house well, respectively.

The main well (Figs. 5 and 6), is about eight feet in diameter and about 33 feet deep below the ground level. The walls, which consist of two rings of brick laid with horizontal joints cemented, extend about five feet above the level

Fig. 4. Pump House, Main Well and North Well, Old Salem Chautauqua Grounds.

of the ground, and are surrounded by an earthen embankment. Surmounting the walls is a conical wooden roof. The walls are not water-tight at any level and where a suction pipe enters the well several bricks have been removed. The earthen embankment is about six feet wide at the top and has side slopes of about 1:1. There is a hole in this embankment along the top of the suction pipe leading to an adjoining pump house and in addition there are several holes on the outside of the embankment evidently burrowed by field mice or other animals. Water is drawn from this well by means of a steam-driven pump and discharged into a distribution system to which is connected an elevated tank (Fig. 7).

The boiler house and north wells are also dug and walled with brick and are about 25 and 28 feet deep respectively. The walls of each rise only a few inches above the ground and are surmounted by plank covers which are not water-tight. Both of these wells are provided with hand pumps, and in addition may be drawn on by a steam pump located in the top of one of them and discharging into the distribution system. This steam pump was not operated during the 1915 assembly, and thus only water from the main well entered the distribution system.

The ground formation at these wells consists of a few feet of top soil, then a layer of clay to about 15 feet below the ground level, and then sand and gravel. The height of the water in the wells is materially affected by weather conditions and by the stage of the Sangamon River.

POLLUTION OF WATER SUPPLY

All three wells are subject at all times to more or less contamination. A sewer (Fig. 8), passes within about 16 feet of the main well and a privy is located only about 110 feet away and on ground about 14 feet higher than that at the wells and draining towards the wells.

The most serious danger of contamination, however, is by flood waters of the Sangamon River, and it was contamination in this manner that caused the outbreak of typhoid. The pollution carried by the Sangamon River consists of the sewage of Springfield entering 27 miles upstream, possible wash from privies on the watershed between Springfield and the Chautauqua grounds, and the sewage from the Chautauqua grounds itself. Assuming a velocity of three miles per hour it would take only nine hours for the sewage of Springfield to reach the Chautauqua grounds.

The wells had previously been flooded during an assembly in 1907, resulting in a large outbreak of diarrhea. The cause of this diarrhea was so apparent at that time that the sickness became locally known as the "Chautauqua Quickstep."

Fig. 5. Main Well and Pump House, Old Salem Chautauqua Grounds.

Thus the Chautauqua Association was aware of the dangers involved in continuing to use these wells as a source of water supply. Moreover, the State Water Survey, on the basis of analyses, had on three separate occasions notified the Chau-

tauqua management that the water was not safe and should not be used unless boiled.

The 1915 assembly was held from August 11 to 25, inclusive. A few days before the close of the assembly, namely, on August 20 and 21, heavy rains occurred causing the Sangamon River to rise rapidly, overflow its banks, and inundate the northern part of the Chautauqua grounds where the wells are located. The flood waters submerged the north and boiler house wells and entirely surrounded the main well, rising within a few inches of the top of the earthen embankment (Fig. 6). Unquestionably, the polluted water seeped through the earthen embankment, aided by the small holes of burrowing animals, for the water became turbid. The pump pit was flooded, but the pump was operated for a while submerged, and since the water is pumped into a distribution system to which is connected an elevated tank, this sewage-polluted water was available for use under pressure during the last three or four days of the assembly. The water continued to be served at the hotel dining-room and restaurant.

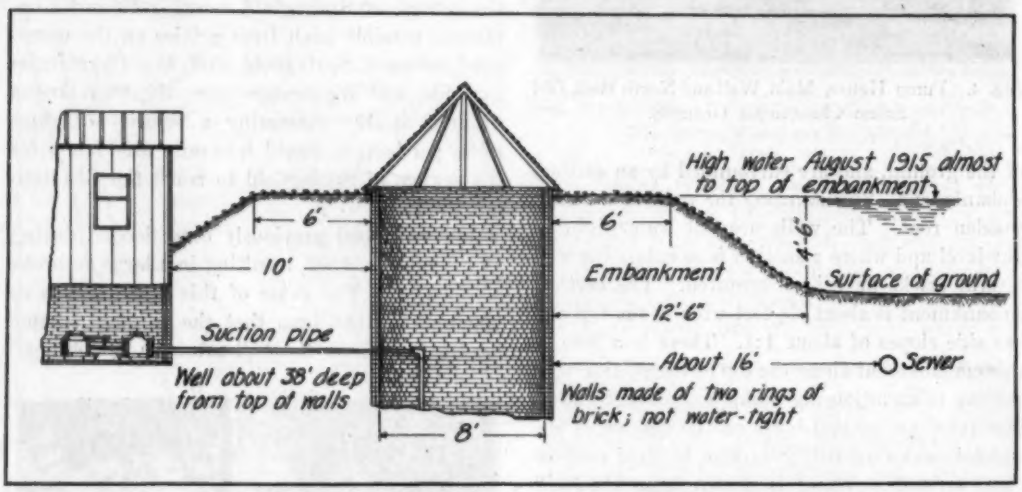

Fig. 6. Sectional Elevation of Main Well, Old Salem Chautauqua Water Supply.

TYPHOID FEVER EPIDEMIC

Epidemic of diarrhea preceded typhoid epidemic.—About a day after the wells became polluted cases of diarrhea began to develop and the first case of typhoid fever occurred on September 1, ten days after the pollution took place. The actual number of cases of diarrhea was not ascertained, but an estimate of 500 would be very conservative. Many of these were severe and prolonged and constituted a serious though non-fatal forerunner of the typhoid outbreak. This relationship of typhoid and diarrheal infection due to polluted water has been shown to exist by a study of many water-borne outbreaks. It is clearly stated in the following quotation from page 835 of Preventative Medicine and Hygiene, by Rosenau.

Polluted waters not infrequently cause diarrhea, sometimes as widespread epidemics, sometimes as small outbreaks, or sporadic cases. Whenever there is a water-borne outbreak of typhoid fever there are also a large number of cases of diarrhea and gastro-intestinal disturbances in which the precise etiological factor has not been discovered. Some of these cases may be mild instances of the major disease.

Magnitude of typhoid epidemic.—The epidemic of typhoid was very explosive in character and involved a large number of cases. In all records were obtained of 201 cases and 13 deaths, thus giving a mortality rate of 6.5 per cent. Probably both the morbidity and mortality rates were higher than this since neither cases nor deaths were consistently reported and it was impossible to know or communicate personally with all persons who had been exposed to the infection. The infection was very severe, but in several instances the patients' symptoms were considered unusual by attending physicians. The nature of some of these cases is best described by the following quotation from a physician's report on one of his patients.

This seemed to be what we used to call (30 years

ago) typho-malarial fever. She had a fever continuous for about four weeks running from 99° to 103°. She had a clean tongue all the time, no sordes or fissures, no eruption on the abdomen, no diarrhea nor distention of the bowels, no hemorrhages of any kind, no delirium, no trouble of the stomach, and was fed freely on raw eggs, milk and Mellins' Food. No symptoms of typhoid outside of the continued fever.

Fig. 7. Elevated Tank, Old Salem Chautauqua Grounds.

Chronological distribution of cases of typhoid.—Figure 9 shows graphically the chronological distribution of the cases, and their relation in point of time to the flooding of the Chautauqua wells. The cases have been numbered in the order of their incidence and this numbering was used in discussing the individual cases in the original report. Many cases that had an attack of diarrhea immediately following the pollution of the Chautauqua wells, apparently fully recovered, and then later developed typhoid fever; other persons experienced similar attacks of diarrhea and did not develop typhoid. Several cases, and these comprise some occurring in the latter part of the outbreak, experienced the preliminary attack of diarrhea and though recovering from the acute character of that illness never felt entirely well and finally developed typhoid. This preliminary illness has been disregarded in selecting the dates of incidence and thus some cases have been relegated to the latter part of the outbreak, which might be placed among the earlier cases. They serve to show, however, that persons may become infected and carry the typhoid germs in their system for a considerable time before actually being taken ill with the disease.

Notation has been made on the diagram of those cases which were of secondary origin, that is incurred their infection from contact with earlier cases. There were 14 such secondary cases and in addition six others who had been exposed to typhoid infection at the Chautauqua grounds and again in their own households by contact with earlier cases, and, therefore, may have been either primary or secondary cases.

Geographical distribution of cases.—Though the epidemic centered at Petersburg, Illinois, it was widespread in extent. In all 26 incorporated communities were affected, and the most remote cases were two persons who, though residing in Illinois, were taken sick while visiting in California and entered a hospital in San Francisco. The municipalities affected and the number of

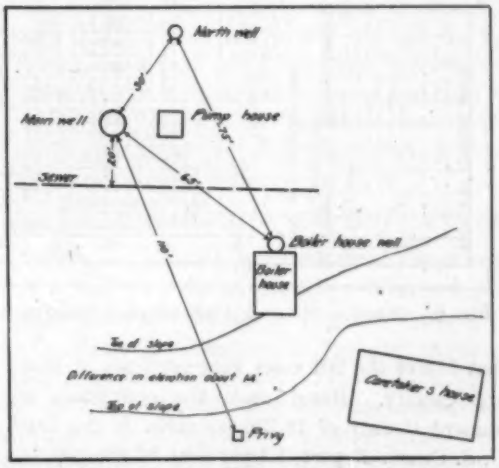

Fig. 8. Sketch Showing General Layout of Old Salem Chautauqua Waterworks.

cases occurring in each are shown in Table 1. For simplification cases residing in the country have been listed under the nearest incorporated community to them, with the exception of the cases near Petersburg which have been separately listed under the heading Petersburg rural free delivery.

Table 1. Distribution of cases according to place of residence:

Municipality—	No. of Cases of Typhoid.	Municipality—	No. of Cases of Typhoid.
Ashland	2	Middletown	1
Athens	24	Newmansville	1
Atterberry	3	Oakford	1
Auburn	1	Pekin	1
Chapin	3	Peoria	2
Chicago	2	Petersburg	68
Decatur	3	Petersburg, R. F. D.	32
Fancy Prairie	2	Pleasant Plains	6
Farmingdale	1	Springfield	6
Greenview	16	Tallula	4
Haskins, Iowa	1	Tice	3
Havana	1	Virginia	3
Jacksonville	1		
Lincoln	8	Total	201
Mason City	5		

The large number of cases occurring at Petersburg, namely, 68, or 2.8 per cent. of the population of that city, was due to the proximity of the Chautauqua grounds, which enabled a large proportion of the residents to attend the Chautauqua assemblies. The same reason explains the fact that 153 of the 201 cases were residents of Menard County. Based upon the population of Menard County of 12,796, as given in the 1910 U. S. Census Report, 1.2 per cent. of the population were victims of the epidemic.

The distribution of cases within a community was studied only for Petersburg, and for this purpose a map of that city was prepared showing by means of colored tacks the location of each case of typhoid. Different colored tacks were used to differentiate between cases treated at homes, at hospitals, recovered cases and fatal cases. The map showed the cases to be more or less evenly distributed over the city with the exception of the eastern edge. This eastern edge comprises the poorer residential section and the people who reside there could not afford to and did not attend the assembly as much as the more well-to-do people. It is interesting to note that although this section of Petersburg became flooded at the same time the Chautauqua wells were flooded, the wells in this part of the city are practically all driven and thus escaped dangerous pollution.

Distribution of cases according to families, ages and sex.—The cases were distributed among 154 households having a total membership of about 725. Table 2 shows this distribution among households in detail.

Table 2. Distribution of cases of typhoid fever among households:

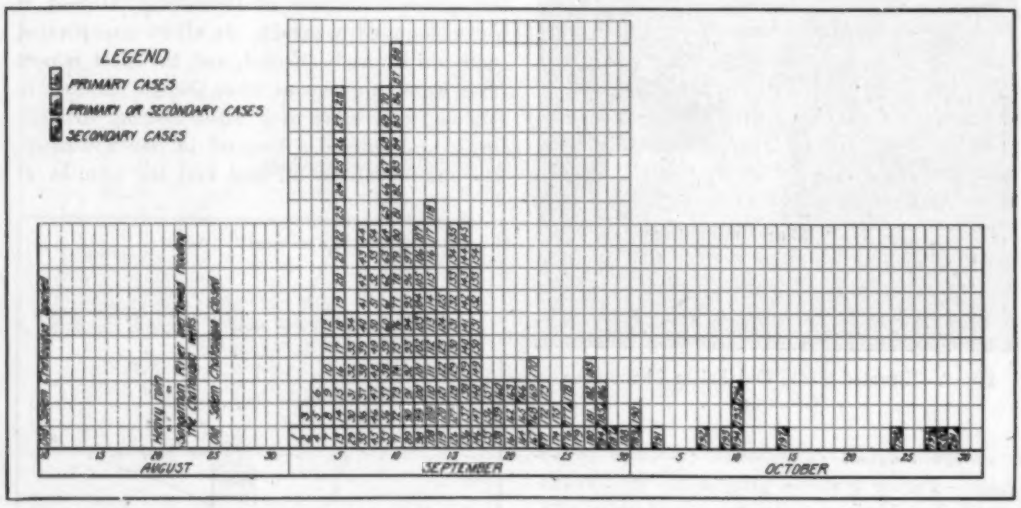

Fig. 9. Diagram Showing Chronological Distribution of Typhoid Cases, Old Salem Chautauqua Epidemic.

119 households	contained 1 case each	119 cases
30 households	contained 2 cases each	60 cases
3 households	contained 3 cases each	9 cases
1 household	contained 4 cases	4 cases
1 household	contained 9 cases	9 cases
154 households	contained a total of	201 cases

In the household containing nine cases only one was a primary case, the other eight resulting from it. The sanitary conditions prevailing at this household were very poor and the physician, when he was finally called in, found that little or no precautions were being taken against spreading the infection.

Table 3 shows the age and sex distribution of the cases:

TABLE 3. DISTRIBUTION OF TYPHOID FEVER CASES AS REGARDS AGE AND SEX.

Age, Years—	Sex		Total.
	Male.	Female.	
4	..	..	..
5- 9	8	9	17
10-14	17	24	41
15-19	17	17	34
20-29	23	38	61
30-39	11	12	23
40-49	4	10	14
50 and over	5	6	11
All ages	85	116	201

Though the cases have been distributed among all ages except the very young, Table 3 shows a preponderance of cases among the older children and younger men and women. This is more clearly shown by Table 4, in which the cases are grouped under fewer age periods. It will be seen that two-thirds of all the cases were between the ages of 10 and 30 years. This age distribution is characteristic of epidemics where the sources of infections are general ones to which persons of all ages are equally exposed, such as epidemics caused by a polluted public water supply. Two examples of such epidemics may be cited from "Typhoid Fever" by Whipple, pages 108 and 142. In an epidemic at Waterville, Maine, caused by a polluted water supply, 64 per cent. of all cases were between 10 and 30 years of age. In an epidemic at New Haven, Conn., also due to polluted water, 50 per cent. of all cases were between the ages of 15 and 30 years. The high morbidity rate of the youths and middle-aged under such conditions is explainable from the fact that of the total population the percentage of persons at these ages is always high.

TABLE 4. DISTRIBUTION OF CASES OF TYPHOID FEVER AS REGARDS AGE.

Age, Years—	Number of Cases.	Per Cent of Total.
0	17	8.5
10-29	136	67.6
30 and over	48	23.9
All ages	201	100

The very high percentage of cases among young and middle-aged persons in this epidemic even for water-borne outbreaks warrants special mention. Although at normal times the percentage attendance of young men and women at the Chautauqua may not have been unusually high, the prevailing bad weather at the end of the assembly when the Chautauqua wells became flooded tended to restrict the attendance to only the younger and more active people. A ball game with a team from Lincoln, on the last day, was of interest to the younger people and also the Forest Players playing Shakespeare's plays, was a special inducement for school pupils to attend.

Table 3 shows that the number of cases among females was slightly greater than among males. Expressed in percentages of the total number of cases, 58 per cent. were females and 42 per cent. males. The excess of females is not large enough to be very striking or significant, yet, if anything, it is suggestive of the Chautauqua assembly. There were more female than male campers at the Chautauqua, as the men had to attend to their regular work, especially the farmers taking care of the late harvest, and thus many men were able to attend the assembly only occasionally and for short visits. The baseball games in the afternoons, probably attracted more males than females, but the baseball fans' visits would be short and thus they were not so liable to partake of the Chautauqua water as the campers or those that came and stayed on the ground all day.

HISTORIES OF CASES SHOWED THAT CHAUTAUQUA WATER WAS THE CAUSE OF THE EPIDEMIC.

During the first part of the investigation and study of the epidemic a blank form for recording the information about each case was not used, although very complete data was obtained. After obtaining records and information of over 100 cases and sufficient data to indicate that the infection came from the Chautauqua grounds the following blank form was prepared and used to obtain the records of the remaining cases, especially those residing in communities which could not be personally visited:

REPORT OF CASE OF TYPHOID FEVER.

Note:—Answers to questions should be as *complete* and *accurate* as possible. Wherever possible, give exact dates.

1. Name of patient.....Age....
2. Address .....
3. Occupation (if student state school and grade) .....
.....
4. Patient at home or hospital.....
Is nurse attending.....
5. Date first felt ill.....
6. Date physician was first consulted.....
7. Name of physician.....
8. Dates and results of Widal tests.....
.....
9. Number of members in household.....
Number of cases.....

10. Number of members that have been inoculated.....

11. Water used at home and at place of business .....

12. Milk obtained from whom.....

13. Did patient attend Old Salem Chautauqua? State whether stayed in cottage or tent or just attended daily.....

14. Exact dates patient was at Chautauqua .....

15. Did patient use: Chautauqua water..... Distilled water.....Coffee.....Iced tea..... Bottled soda.....Ice cream.....

16. Did patient use milk at Chautauqua, and if so from whom was it obtained?.....

17. Did patient eat at Chautauqua hotel?.... Where else? .....

18. Did patient use Chautauqua baths?..... Swimming pool?.....

19. How many other members of family attended Chautauqua?.....

20. Have other members been sick in any way? .....

21. Additional remarks .....

.....

.....

.....

Name of person supplying information.....

.....

Name of person obtaining information.....

.....

The detailed data relative to milk, water and food supplies of the patients will not be presented here. In brief it may be stated that there was no food or milk supply common to a large number of people either at their homes or at the Chautauqua grounds. Many people had not eaten on the grounds with the exception of lunches which they brought from home, and over one-half the cases had not used any milk sold on the grounds. At one time rumor spread that distilled water and bottled soda might be a contributory cause, but this rumor was found upon investigation to be absolutely baseless, and as a matter of fact, people who took the precaution to use distilled water in preference to the Chautauqua water supply escaped typhoid infection.

Of the 201 cases of which records were obtained 14 were undoubtedly secondary cases. The 187 remaining cases had been on the Chautauqua grounds at the time the wells became polluted. Of these 182 gave definite records of having used the Chautauqua water; four others were not sure whether they had drunk the water, but were sure that they had drunk iced tea or coffee made with this water, and also had eaten at the hotel where the water is used. The one remaining case did not remember drinking the water or tea or coffee made with it, but had eaten at the hotel where the water is used.

An effort was made to arrive at an estimate of the number of persons who were exposed to the infection by using the water, but sufficient reliable data could not be obtained. The total attendance at the Chautauqua the last three days, or after the wells were flooded, it is estimated, amounted to about 7,000, but how many persons are counted in this attendance two or three times it is difficult to estimate, and no data obtained makes it possible to draw any conclusion as to what per cent. of the attendance actually used the water.

DISCUSSION.

Dr. Robertson thought all we need to do is to study the records of the number of deaths from typhoid fever in Baltimore, to understand that there is something which makes the typhoid mortality high in that city—the highest or next to the highest of any large city of over 500,000 population, about 24 in 100,000 this year, whereas the city of New York has 6 in 100,000, Boston this year had 5.5, while Chicago led all the cities in the United States with 5.4 in 100,000.

Floods should always be a signal to the health officer of the community to get busy, watching for possibilities of polluted water supply. A few years ago, in Chicago, about 1903, we had a terrible flood, the basements downtown were flooded, and following that we had one of our greatest typhoid epidemics. At that time with a plumber he went down in the manholes on the west side, down in 5 ft. sewers, on the theory that it was the backed-up sewers that produced the typhoid, because many of those manholes were bubbling out sewage on the street. When the flood of Jan. 21, this year, came, he predicted that we were going to have an epidemic of typhoid in that vicinity.

Dr. Vanderslice, Oak Park, in view of the valuable papers contributed to the Section on Public Health by officials of the State Water Survey and by the Sanitary Engineer of the State Board of Health, suggested that this section should have an invitation list, and that each year we would send out to the sanitary officers of the various municipalities and the State Public Survey and the sanitary engineer departments of the State, a regular list asking them to take part in our meetings and add something to our programs.

Dr. Drake, Springfield, referring to the question of source and the recommendation of typhoid vaccine, cautioned against too much reliance upon typhoid vaccination. Any person with a gross infection of

typhoid, vaccination will not always protect. Forty cases of typhoid developed in this state where the persons had received an anti-typhoid vaccination several months previous. We believe also that if we encourage the public to rely too much upon the anti-typhoid vaccination, that we are developing a disregard for all the sanitary precautions. In the army, of course, it can be pointed out that an anti-typhoid vaccination has been singularly successful, but I also want to point out that they have not relaxed one particle in their ordinary sanitary precautions.

The State Board of Health, through its sanitary engineering department and its division of communicable diseases is preparing to take as complete a survey as it possibly can make, with its limited forces, of the Chautauqua, the picnic grounds and summer resorts of the State of Illinois. At least, we are going to cover the northern Illinois resorts quite a bit more thoroughly than we have in the past. Our experience in the past two years teaches us the absolute necessity of inspecting these places. The unfavorable publicity that the Old Salem Chautauqua got from its epidemic of typhoid fever has had the result of closing that permanently, and it ought to be a lesson to other Chautauquas and other summer resorts.

Dr. Bartow of Champaign was impressed with the widespread influence of these two epidemics which have been discussed, which seemed to illustrate the necessity of cooperation as we have had it in these investigations by all the state governments and the federal governments. Perhaps one of the important means in reducing the typhoid fever rate is the clearing up of the typhoid fever situation at Niagara Falls. Before they put in the water purification plant the rate was 170 per 100,000, and after the water purification was put in the typhoid rate dropped to below 20, and the typhoid rate in the city of New York and the whole state of New York was lowered. Now, it would seem that a resort like Niagara Falls must, with its typhoid fever, affect the whole United States. If the little Salem Chautauqua could cause typhoid fever rate to be increased in California, how much greater would be the typhoid caused by a place like Niagara Falls? The work which Dr. Drake of the State Board of Health is doing in clearing up these resorts should help reduce the rate throughout the whole State, and we have also the cooperation of the State of Michigan and possibly the State of Wisconsin in clearing up their resorts.

Mr. Hansen thought that the situation with reference to the oyster industry in the east is perhaps at the present time not quite as black as it has been painted, because the various state boards of health along the coast, as well as the United States Public Health Service, have been very active in the last few years in stopping the gathering of oysters from polluted beds, and it is due to that activity in a large measure that oysters have not been gathered from around Cambridge, where there is so marked a pollution. Of course, the situation is not as good as it should be now, but it is receiving attention and the health authorities are receiving valuable cooperation of the oyster packers themselves, and nobody who is in any way connected with this epidemic was so incensed over this situation as the packing firm that shipped the oysters. They felt that they should have been notified as they expected to be by any persons from whom they obtained oysters, that there was typhoid fever at the collecting point.

But probably the typhoid fever rate in certain more or less southern cities, like Baltimore, is maintained high by eating raw oysters, as Dr. Robertson suggested, but there are also various other causes that are characteristic of the southern cities. Probably the most influential cause is the carrying of typhoid fever by flies. Recent investigations made by the United States Health Service with reference to the adequacy of typhoid vaccines discloses a startlingly large percentage of the vaccines that are on the market are inefficacious and they are about to warn all health officers to make sure their typhoid vaccines are carefully tested before they distribute them. They believe that by thorough testing of the typhoid vaccines they can be made effective and believe the results obtained in the army are due to the fact that their typhoid vaccines are tested. I may say that the investigation of summer resorts is now in full fling and we hope to have a report available by the opening of the summer season so that the results may be published.

Mr. Ferguson (closing discussion) said, concerning typhoid vaccination, that in the Old Salem epidemic one man was ailing forty-six days before he finally went to bed with typhoid. He had been inoculated not quite a year before. In a recent epidemic at Pana, that you must say is still in existence since many people are still sick, there are at least two people that have been inoculated against typhoid that are sick with it.

THE IMPORTANCE OF BACILLUS CARRIERS IN THE PROPAGATION OF DIPHTHERIA.*

GUSTAV F. RUEDIGER, M. D.

LASALLE, ILL.

From the Hygienic Institute for La Salle, Peru and Oglesby.

It is no longer a disputed fact that many people who have been in contact with a diphtheria patient will temporarily harbor the specific bacilli in their nose and throat. It is also well known that a very large per cent. of all recent "contacts" are harboring bacilli of full virulence. Very different results are obtained, however, when cultures are taken from the throat and nose of healthy persons who have not been recently exposed to diphtheria. Under such circumstances only from 1 to 2.5 per cent. yield positive

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

cultures and about 95 per cent. of these are entirely non-virulent.[1]

In a tabulation by Nuttall & Graham-Smith of over one thousand recent exposures where cultures were taken the following results were obtained:

1. Among members of the same family where the patient was isolated from 10 to 50 per cent. yielded positive cultures. Where the patient was not isolated from 50 to 100 per cent. were infected or became temporary carriers.

2. Attendants on the sick gave positive cultures in from 12.5 to 48 per cent. of the tests.

3. Among relatives of the sick who were not confined to the same house positive cultures were found in from 12 to 38 per cent. of tests, and,

4. Among school children where diphtheria was prevalent positive cultures were obtained in from 2.5 to 45 per cent.

In another tabulation of 227 recent exposures with positive cultures, where virulence tests were made, 80.1 per cent. were found to be harboring the virulent organisms.

It would seem from these observations that the recent "contacts" who had become temporary carriers or were suffering from a very mild and unrecognized infection must play an important rôle in the propagation of this disease. This statement is fully verified by our experience with recent outbreaks of diphtheria in the schools, as well as by the experience of other health departments where immediate control of every outbreak is undertaken.

During the last two years we have had eight outbreaks of diphtheria in the schools of LaSalle, Peru and Oglesby, but only one of these resulted in what may be called an epidemic. This outbreak occurred in October and November, 1914, and was handled by Drs. Edward H. Hatton and O. C. Yoder of the Hygienic Institute. During the month of September three cases were reported from one of the assembly rooms of the Central school in Peru. Six cases developed during the first twenty-four days of October and an average of one case every day during the last six days of the month and the first three days of November. On November 4, 28 pupils in one of the sections of this assembly room, which seemed to be suffering most from the infection, were cultured and 8 positive cultures were obtained. On the following day, Thursday, the remaining 85 pupils in this assembly room were cultured and 7 more positive reactors found. All of these positive reactors were immediately excluded from school and quarantined in their homes. School was dismissed from Thursday until Monday to give the janitors time to disinfect the room, desks and books, and on Monday morning all pupils returning to school were again cultured and sent home for the day. Two more reactors were found and isolated and from that time on no new cases were discovered among the pupils of this room for more than a month.

Five of the 17 pupils who gave a positive culture developed clinical diphtheria within five days after the positive cultures were obtained, during all of which time they would have gone on infecting others had they not been immediately isolated on the strength of the cultural findings. Two had had diphtheria within three months previously and had been released after two negative cultures had been obtained on consecutive days. Ten of the 17 positive reactors at no time showed symptoms of clinical diphtheria, although 3 of them harbored the bacilli for more than 35 days. At least three of the latter group of carriers we know were capable of transmitting clinical diphtheria to others. One of them infected a smaller brother and sister who were not of school age and both had a typical and severe form of the disease. A second carrier infected a sister, a high school pupil who was not otherwise exposed; and the third infected a smaller brother, an adult sister, who was not attending school, and a one and one-half-year-old girl. All of these had typical diphtheria. The further activities of this carrier were checked by giving an immunizing dose of antitoxin to all other members of the household.

The seven other outbreaks that came under our observation were checked promptly in each instance after two cases had been reported from the school room. In one of these instances 54 cultures were taken and two carriers found and isolated. One of these had a small brother ill with diphtheria at home, but the case had not been reported. It is very probable that the other carrier found in this school and the two cases that had been reported a day or two pre-

1. For a review of the literature on this subject see Nuttall & Graham-Smith: The Bacteriology of Diphtheria, 1913, pp. 192; and Goldberger, Williams & Hachtel: Hygienic Lab. Bull., No. 101, 1915.

viously were infected by this carrier. In three other outbreaks where 32, 43 and 45 cultures were taken we found 4, 4 and 5 carriers respectively. All of these were immediately isolated and the desks and woodwork disinfected, and no further cases developed in these rooms within a month. In the other three outbreaks only one carrier was found and isolated in each, but no further trouble was experienced in these rooms.

One of the carriers in these seven groups last mentioned gave a negative culture on the 6th day, twelve on the 8th day, one on the 9th day, and four on the 14th day. Release cultures were taken usually on the 4th day after the positive culture had been obtained and thereafter every other day until two negatives were obtained on consecutive days. No virulence tests were made, although there can be no doubt but that they are of value, especially if the carrier gives no history of having been recently exposed to diphtheria. Antitoxin was not given as a routine unless clinical signs and symptoms supervened.*

CONCLUSIONS.

The following conclusions seem warranted from the foregoing considerations:

Bacillus carriers who have been recently exposed to diphtheria frequently transmit an infection to others which gives rise to clinical diphtheria, although the carrier may never show any clinical symptoms of the disease.

These temporary carriers I believe are of the greatest importance in keeping up an epidemic in a school or any other place where large numbers of persons are congregated.

In order to rapidly check such an epidemic it is necessary that throat and nose cultures be taken from every "contact" and that all those who give a positive culture be isolated, unless it is proven by animal experiment that the culture is devoid of virulence.

I do not believe that it is possible to pick out the carriers by a mere inspection of the throat and nose as recently advocated by Lewis.[2]

*Since this paper was written we have had another instructive experience with a temporary carrier. A boy was found in school suffering from diphtheria. Cultures were taken from both throat and nose of all of the thirty-seven pupils in the school. Eight of these were positive and were excluded from school. One of these carriers, who showed no signs or symptoms of diphtheria, infected a smaller sister and his mother at home and both became ill with the disease.

2. Lewis: The Control of Diphtheria, Jour. A. M. A., 1916, LXVI, 1535.

DISCUSSION (ABSTRACT)

Dr. A. L. Mann, of Elgin: The persistence of sporadic cases of diphtheria at the State Hospital at Elgin for two or three years and the inability to account for their presence suggested the advisability of having all the patients, everybody on the ground (between 2,500 and 3,000) cultured. The one or two attendants showing clinical signs of the disease were isolated. One was isolated in St. Luke's hospital four or five weeks until the clinical symptoms subsided entirely, but the culture from the throat showed luxuriant growth. She then stayed home for three or four weeks longer, until Drs. Goethe and Mann found, on two successive days, two negative cultures, when she was allowed to return to the hospital to her duty. Three days after she was returned to the hospital Dr. Sell found positive cultures in her throat, and it was necessary to isolate her three weeks more before satisfactory negative cultures were taken from the throat.

This fact should impress the necessity for making repeated cultures for negative results. Ordinarily two negative cultures on two successive days do not determine the condition. There were over 65 cases out of 2,500 or 3,000 that showed positive cultures. How many of those were strictly virulent were not found when the inoculations were made. This work was done last November and only last week was the last carrier released from quarantine.

Anti-toxin treatment never makes any impression on these carriers. They simply wear themselves out as the body of the individual furnishes the necessary resistance to overcome the infection.

A Voice: Doctor, did you use the lactic acid culture?

Dr. Mann: I do not recall whether we used the lactic acid culture or not; we used everything else.

Dr. Hemenway, of Evanston, advocated the use of lactic acid bacilli, not in tablet form, but in powdered milk, which is a convenient way of giving it. He suggested the advisability, at the opening of every school year, of taking at least a percentage culture in every room of all the schools. It is hardly advisable to go through the whole school, but if children are taken at random in every room, you are likely to get trace of where you are going to have trouble in the future.

Dr. Robertson, of Chicago, related his first experience with diphtheria carriers as an intern in the Cook County Hospital, where, during June, 1897, he and Dr. A. Paul Heineck were located in the contagious disease ward. After being there for five or six days cultures from each other's throats indicated that they were diphtheria carriers during that thirty days and remained carriers for five or six days after leaving the contagious disease ward.

Last year, as commissioner of the Chicago Department of Health, he contemplated doing what Dr. Hemenway stated, namely, culturing the throats of 300,000 children in the public schools and another

100,000 in the parochial schools, but found that it was absolutely impossible with the force available. As the next best thing, 50,000 children that had a history of any kind of nose or throat trouble were cultured last winter, and about 4 per cent of them were diphtheria carriers. In other words, 2,000 children were excluded from the public schools last year,—about ten times as many children as were ever excluded before.

The Christian Scientists and the League for Medical Freedom were on his neck almost every day. "My child has been sent home. There is absolutely nothing wrong with this child. She did not have diphtheria; it was her sister that had diphtheria." Such statements as that come right along. Whether it just happened to be the case or whether this had anything to do with the reduction of diphtheria in Chicago last winter, it was about 20 per cent less during last winter than the winter before and the corresponding winters, because it has been running about the same rate.

If we could educate the public to permit us to examine all the throats or do the way they did in the Chicago University in the scarlet fever epidemic,—paint all the throats with iodine, together with the Schick's test,—we will be able some day to control diphtheria in our city.

Dr. Ruediger: In the treatment of chronic carriers we used the lactic acid cultures, that is, whey from sour milk, which the patients used faithfully as a gargle. It is difficult to ascribe beneficial results, which appear to be gotten, to the use of any remedy because the bacilli will disappear even if we do not use any remedies. Dr. Weaver, of the Durand Hospital in Chicago, is of the opinion that practically every chronic carrier has some tonsil trouble, and that the condition will be remedied if the tonsils are removed.

One of our Public Health nurses had been a carrier and had repeated attacks of diphtheria; her tonsils were removed about a year and a half ago, and she ceased to be a carrier.

We culture all sore throats in our schools. It does not make any difference what the clinical picture is, if there is any history of sore throat, we take a culture and find a great many sore throats that do not give the picture of diphtheria at all and yet give a positive culture.

There is a tremendous opposition in some quarters to isolating these carriers when they are not sick. I recall one particularly last fall. The father made all sorts of threats. He was not going to get any physician from La Salle, Peru or Oglesby, because, he said, "they are all in cohouts." He said, "I will get a physician from somewhere else." He was going to carry this thing to the very limit. That is all we ever heard of it. He didn't do anything at all.

RESULTS AFTER FOUR YEARS USE OF ARTIFICIAL PNEUMOTHORAX.*

LeRoy S. Peters, M. D.,
ALBUQUERQUE, N. M.

It is a far cry from the early attempts at artificial pneumothorax to the present method which has proven most efficient in the treatment of unfavorable types of tuberculosis. Like all new procedures, much grief resulted from faulty technique and failures were common from lack of understanding in the selection of suitable cases. Time and patience only were necessary to put the method upon a sane and practical basis, and today treatment of tuberculosis by artificial pneumothorax stands out by far the most promising of any method yet introduced.

We need not say that clinical impressions lead us to think thus and so, that we believe such results can be obtained, or that empirically speaking our patients seem better. *We know.* It resolves itself into a statement of plain facts, not theory. In other words, we have passed from the realm of medicine to that of surgery, from the realm of uncertainty to that of fact. We have learned many interesting certainties, which time and experience alone can teach, and many have been the sacrifices on the altar of knowledge. One need but look through the literature to acquaint himself with this fact. But this same time and this same experience has placed the procedure beyond the pale of doubt, and today one can feel perfectly safe by the exercise of reasonable care and judgment and the employment of average ability.

In the selection of cases one must follow to a certain extent his own judgment, although a few dogmatic statements covering the field roughly may be laid down. Some observers advocate compression in early cases, and from a consideration of results thus far obtained in unfavorable types one would feel that perhaps there is justification in such advice. However, I feel that unless for financial reasons the patient must hasten his cure, early cases are best let alone, for the majority recover by the usual routine. I would divide the selection of cases as follows: 1st. The typical gas case, and for that reason the most favorable, is the unilateral; but waiting to find this type would narrow the field for pneumo-

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

thorax to a limited few. 2nd. Bilateral cases with not too much active trouble on the opposite side offer excellent chances, and they make up the large percentage for operation. As a matter of fact, as I shall show later, many of the opposite lungs are made better, while in the majority no progression is noted. 3rd. Extensive trouble on both sides with hopeless outlook, and in which the lesser offender is partially compressed to relieve symptoms. 4th. Compression for hemorrhage. To make the indications more general one might say that all cases are suitable for attempted compression that have been under observation for some time and show no improvement or are progressive under the usual routine treatment.

It is not within the province of this paper to cover the field of pneumothorax, but I felt that a few generalities might not be amiss. However, it is my purpose to give to you the results after four years use of the method and to bespeak from a study of these results the continued use and wider application of this procedure in the treatment of tuberculosis.

During the four years we have attempted pneumothorax in 135 cases and obtained a suitable compression in 103, 32 being inoperative because of adhesions. Of these 135, 14 were in the moderately advanced stage and 121 were far advanced, all being unfavorable types. Five were compressed because of hemorrhage and in eight pleurisy with effusion had already made the compression and we simply introduced air as the fluid absorbed or had to be withdrawn because of pressure symptoms. In the bilateral cases the opposite side was made worse in eight and better in 18, no change being noted in the remainder. Thirty-six showed some complications as shown in the appended table. Fluid developed in 29, or 28.15 per cent of all cases treated. There is little doubt that given sufficient time varying amounts of fluid will develop in the great majority of cases, and those who report small percentages have used the method too short a time or have failed to find small collections, which, as a rule, can be detected only by use of the fluoroscope.

Last year I reported before the National Association for the Study and Prevention of Tuberculosis our exudate cases, and in that report I spoke of 12 effusions that became purulent. Eight of these showed on culture and by inoculation only the presence of the tubercule bacillus, and two a mixed infection. In two we did not obtain cultures owing to the fact that they left the institution. One of the mixed cases was due to a spontaneous pneumothorax, and although I could not so determine, I believe the other to have been of the same nature. In other words, infection was from within and not from without. These pus cases developed two years ago, and none has developed since, although we get the same percentage of fluids. I have never been able to offer an explanation, but about this time we stopped using nitrogen purchased of a Chicago firm and began the use of filtered air, which we have used ever since. May it not be possible that the nitrogen contained impurities of an irritant nature which caused inflammatory reaction with rupture of tubercles on the pleura, thus freeing large numbers of tubercule bacilli into such fluid with ensuing pus formation?

It is interesting to note that after watching these eight tuberculous pus cases for one year, all are well and the pus cavity dry, their recovery being similar to all serous effusions. The two mixed cases are still living, both having been operated upon and drainage put in. In one of these the sinus is closed, he has gained 23 pounds in weight and to all appearances is perfectly well. There is rather a marked deformity owing to contraction and filling in of the pus cavity. The other still has a discharging sinus, but at the present time is working and running normal temperature. In neither of these was a rib resection done—merely an incision between the ribs and the introduction of a rubber drainage tube.

Coming now to results we have 28 cases under treatment, or 27 per cent of the total number. Of these 10 per cent are arrested, 64 per cent improved, 17 per cent stationary and 7 per cent progressive. It may be well to note here that we have followed the new classification of the National Association and that referring to arrested cases we refer to the type formerly termed "apparent cures." We have 33 patients that have been discharged from one to three years and 9 under one year. We have discharged a total of 75 patients. Of these approximately 31 per cent are arrested, 13 per cent improved, 9 per cent stationary, 3 per cent progressive and 44 per cent dead. At the present time we have 20, or 19.41 per cent, working at various

pursuits. These figures could be augmented greatly, inasmuch as many others discharged could be working if necessity so demanded.

Unless I call to your notice results in this same class of patients by the usual routine, these figures spell nothing. Therefore, I have elected to make comparisons and to that end have chosen average results East and West for comparative purposes. In doing this I have looked over state sanatorium reports plus private institutions and averaged these for the East, and for the West have averaged the reports of the three government institutions and private sanatoria. The average thus obtained shows in this type of case in the East 4.5 per cent arrests and in the West 15 per cent arrests. I have intentionally omitted comparison of the other results, inasmuch as restoration of economic usefulness is in reality the only phase worth consideration. To put it more graphically then, by means of artificial pneumothorax we have changed results in unfavorable types of tuberculosis from 4.5 per cent arrests East and 15 per cent West to 31 per cent arrests, making it seven times better from the Eastern standpoint and twice better from the Western. In other words, we have doubled the chances of the unfavorable consumptive, even under the most favorable climatic conditions.

These results should make possible the saving of many lives in the East who are unable to avail themselves of the luxury of climate and are forced by necessity to take their chances in less favorable localities.

Again let me state that by the introduction of artificial pneumothorax we have by far the greatest weapon against tuberculosis that has yet been given the unfortunate consumptive.

THE FOLLOWING APPENDED TABLES GIVE THE WORK OF DR. A. G. SHORTLE AND MYSELF DONE AT THE ALBUQUERQUE SANATORIUM:

No. of Cases.	Stage.	Fluids.	Effect on Opposite Lung.	Complications.	Inoperable	Results.			Discharged	
						Under Treatment.	Discharged.	Working	1-3 Yrs.	Under 1 Yr.
135	II. 14 III. 121	37 Minus 8 with only effus. = 29	8 worse 18 better	T. B. testicle..... 2 Pericarditis ..... 1 Enteritis, T. B.... 5 Mit. Reg..... 1 Nephritis ..... 1 Syphilis ..... 3 Spon. pneu..... 3 T. B. throat.....11 T. B. ear..... 1 Pl. effus..... 8	33	Improved .....18 Arrested ..... 3 Stationary ..... 5 Progressive ... 2 Total 28	Improved .....10 Arrested .....22 Stationary .... 7 Progressive ... 2 Dead .....33 Total 75	20	33	9

PERCENTAGE TABLE.

Stage.	Fluids.	Effect on Opposite Lung.	Complications.	Inoperable Cases.	Results.		
					Under Treatment.	Discharged.	Working.
II. 14 or 10.37% III. 121 or 89.63%	29 or 28.15%	Worse, 8 or 7.76% Better, 18 or 17.47% No change, 77 or 74.75%	35 or 34.95%	33 or 23.70%	28 or 27.18% Imp., 18 or 64.28% Arrest., 3 or 10.71% Stat., 5 or 17.85% Prog., 2 or 7.14%	75 or 72.81% Imp., 10 or 13.33% Arrest., 23 or 30.66% Stat., 7 or 9.33% Prog., 2 or 2.66% Dead, 33 or 44%	20 or 19.41%

POLIOMYELITIS.*

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I wish to say in the beginning, that if any of my audience expects to glean any definite knowledge relative to the etiology, symptomology or treatment of poliomyelitis, I fear you are doomed to disappointment. I presume there is no disease at present with which the medical profession has to deal in which they are groping in the dark to the extent they are in poliomyelitis.

Poliomyelitis is described by most authors as being an "infectious and contagious disease." Ordinarily I am opposed to this combination of terms in describing a disease. I think there is a marked distinction between the terms, "contagion" and "infection." While these terms are used more or less synonymously, and Webster says, in an old work, that German medical writers make no distinction in these terms (whether or

*Read at the meeting of Iroquois-Ford Medical Society at Gibson City, Ill., Sept. 5, 1916.

not this is true to-day, I don't know), I believe there should be a distinction made.

A contagious disease is one that may be conveyed from one to another through contact, or possibly air-borne. An illustration of this definition may be noted in smallpox, measles, scarlet fever, etc. An infectious disease must be transmitted from the afflicted to the healthy through the alimentary tract, respiratory tract, or direct inoculation through the blood, as is demonstrated in typhoid fever, typhus fever, yellow fever, tuberculosis, etc. But as the source of infection of poliomyelitis is to-day unknown, we are probably excusable for using this combination of terms. Just what the source of infection of poliomyelitis is, or the exact organism that produces it, is unknown to-day, but I hope that the scientists and research workers who are laboring so diligently in this direction will soon be able to give us more definite knowledge relative to the etiology, as well as the treatment of this dreaded disease.

Flexner of the Rockefeller Institute recently stated that a minute, filterable micro-organism has been secured in artificial culture, which is the cause of the disease, but little has been given to the profession regarding it.

Whether poliomyelitis belongs to the contagious class of diseases, or the infectious class, according to my definition given above, is a mooted question. Personally, I regard it as an infectious disease, and do not think it contagious in the sense that measles, scarlet fever, smallpox, etc., are contagious. I assume personal responsibility in making this statement, and would not want to be quoted publicly, for the reason that at the present time rules and regulations are laid down by our higher health officials for quarantining of poliomyelitis, as if it was the most violent contagious disease. I have no disposition to criticize this, but, on the contrary, I strongly endorse it, for, as I said, the source of infection is unknown at present, and until it is definitely settled, there is a great responsibility resting upon the health official in authority, and for the good of humanity and the safety of the rising generation, it would not be short of criminal negligence for health officials in authority to take any chances in their efforts to control this most dreaded disease.

No doubt I could have given you a much more interesting paper, and also no doubt would have been much more edifying, if I had had the time to consult different authorities and indulged in a little plagiarism, but as I have been pretty busy for the past few weeks, I have had no time for this, but will give you, mostly, a few original thoughts gleaned from personal experience, consequently, as I said, I do not expect my remarks to be much of an education to you, but possibly it may have the effect of bringing out a discussion and some original thoughts from some of my fellow-practitioners, whom I deem it an honor to address.

During the past two months I have been engaged almost exclusively in investigating poliomyelitis for the State Board of Health. During this time I have seen something over 65 cases. The youngest of these cases was five months old, the oldest case 29 years. To the best of my knowledge, in only four families has the second or more cases developed. This in itself would not be conclusive proof of it being a contagious disease, neither would the fact that so many have escaped the second case prove to the contrary, but in a purely infectious disease the same conditions that produce it in one member of the family may produce it in another. This is demonstrated in typhoid fever and other similar infections. About two months ago I saw two cases in one family in Decatur. The second case developed five days after the first case. Surely this would look suspicious as a contagion, but I saw these same cases a few days ago, and the mother gave me information I did not get on my first visit. She told me that even after the first child complained of being sick, his little sister chewed some of his gum. Could anything be more effective than this, as a direct inoculation?

Diseases that were considered extremely contagious a few years ago have since proven to be infectious, and by removing the cause of infection the disease has been controlled. Prominent among these is yellow fever. A few years ago the most rigid quarantine regulations were established, and states would even quarantine against their sister states. After the wonderful discovery of Dr. Finlay and his co-workers the real source of infection of yellow fever became known, and the disease became easily controllable. I don't believe that a really contagious disease is entirely controllable by climatic influences. Smallpox, measles, diphtheria, etc., seem to thrive better in cold weather, still hot weather does not entirely eliminate them. Yellow fever was a

summer disease, and, before the discovery of the cause, it was an established fact that cold weather entirely eliminated the disease. Poliomyelitis is a summer disease, which impresses me with the idea that it is an infectious disease, in which the child is inoculated by taking the germs into the system through food, or directly inoculated by some insect. Certain animals have diseases similar to poliomyelitis in the human. In quite a number of isolated cases that I have inspected I have found on the premises sick chickens, dogs, cats, etc. In one case in Edgar County, in making inquiry along these lines, the mother of the child stated she had lost two or three dozen chickens in the past few weeks. With the physician in charge of the case I went out and examined some of these chickens, and found them to be paralyzed, similar to a child infected with poliomyelitis. There were no reflexes about the lower extremities, but about the head they seemed to be perfectly normal. If poliomyelitis should prove to be produced through animal infection, the question might arise as to what produces it in the animal, but that, of course, would be a minor consideration. A few days ago I was riding on an interurban car from Decatur to Springfield. A very intelligent looking gentleman was sitting by my side, and I observed that he had, in his youth, been an unfortunate victim of poliomyelitis. I could not resist the temptation to introduce myself, in order to gain a little information, if I could, as to how the disease was considered in those days, which I rightfully suspected was more than a quarter of a century ago. He gracefully acknowledged and reciprocated the introduction, and he proved to be a very intelligent gentleman in fact, as well as in appearance. He was a professor of geology in one of our state universities. He said he had the disease when he was one year old, but that it was not called poliomyelitis, or infantile paralysis, at that time. This, of course, we know to have been a fact. In discussing the possible cause of the disease, as I found him to be apparently as eager to gain information about the disease as myself, he gave me this history about his own case. He said his mother found him out in the yard playing with a stray kitten. His mother took the kitten away from him, and discovered it was sick, and had it killed. A short time afterward he developed poliomyelitis, from which he has since been a hopeless cripple. If the theory of animal infection, which some believe, should in the future prove to be correct, what then would be the source of infection? Will it be by contact? Will it be by the child inadvertently putting the fingers in the mouth after having handled the animal, or will it be direct inoculation through the medium of some insect? I believe either of the two latter theories to be possible. With the present limited knowledge of insect carriers, I believe the preponderance of evidence is against the quilty fly, especially of the green-head variety. A few days ago, in East St. Louis, I inspected a case of poliomyelitis in which I could not trace the origin of infection. In going over the premises I discovered a dead chicken which the family said had died rather suddenly, and described its symptoms as closely simulating paralysis. Dr. White of St. Louis, who had been doing some research work along these lines, came over to investigate the case with me. We found the green-head flies merely swarming around this carcass, about which they had deposited thousands of eggs. We killed several of the flies, and found them all but bursting with their eggs. Dr. White took a few of the flies and the carcass of the chicken to his laboratory, but I have not heard the results of his investigations of this case.

Dr. Flexner says that paralytic diseases among poultry and pigs have been noted to coincide with the appearance of poliomyelitis on a farm or in a community, but that they had been excluded as being carriers of the disease, and that the disease from which they suffer has long been known to be quite different from poliomyelitis. And he says, further, that their occurrence may be coincidental. No one in this room, not even I, will doubt for a moment the superior value of Dr. Flexner's opinion, but, as I have said, this paper is made up largely from a few original thoughts, which I gleaned from personal experience. I know that I am addressing medical men who nearly, if not all, are like myself. We have no fully-equipped laboratory at our command, and few of us would be qualified to get the desired result if we had one. So, in the absence of any definite knowledge through our teachers, who gather and prove facts by the aid of these laboratories, we must gain our ideas from a different source. We must use extreme care in arriving at a diagnosis from both the objective and sub-

jective symptoms. We must be keen observers, and then let our ideas crystallize as the result of these procedures. No one has a higher regard for Dr. Flexner's opinion than I have, but for so many isolated cases of poliomyelitis to develop far out in the country, unable to trace any other source of infection, and discover these sick animals on the premises, as I have described, strikes me very forcibly as being a little more than a mere coincidence.

The diagnosis. No one is an infallible expert on the diagnosis of poliomyelitis. This, doubtless, will remain true until the laboratory will furnish some method of settling doubtful cases, as in diphtheria and typhoid fever. Formerly poliomyelitis was considered a disease from which the child never fully recovered. Today this is regarded as a grave mistake by all authorities. It is regarded as a fact now, that we have many cases of poliomyelitis of the so-called abortive type, in which there is not even any paralysis. A recognition of this fact and a diagnosis of these cases, if possible, is very important, as they become "carriers" from which the most malignant cases may develop, and this greatly hampers the efforts of the health officials in stamping out the disease. In an isolated case of this kind, however, I consider a positive diagnosis next to impossible, with our present knowledge of the disease. The prodromal symptoms of poliomyelitis will also vary a great deal. As is well known, poliomyelitis occurs in the great majority of cases in children, about 90 per cent., I believe, under ten years of age. My own experience has verified this. In many cases of very young children, the subjective symptoms are impossible to get. In these cases, as the history is given by the mother, we find that the child has had fever for from one to three days, or possibly more, crying when being handled, which would indicate tenderness, and then they would notice an inability to use one or both legs, or possibly the arms. In older children, who are able to describe the subject symptoms, we will find, aside from the fever and sick stomach, they complain of headache, principally in the back part of the head, tenderness along the spine, and probably along the muscles involved. The sensory nerves are not involved, but there is an absence of reflexes, particularly the patellar and cremasteric. Some authorities, I note, speak of the reflexes sometimes being present, and other times absent. To the best of my recollection, in only one case where I felt reasonably sure of my diagnosis, was the patellar reflex present, and that was in the man 29 years old, and the diagnosis was strengthened in his case by connecting it with a well-marked case in a near relative's family, with whom he had associated. Added to these symptoms are usually restlessness, drowsiness, etc. The paralysis usually develops within three days. Sometimes shorter, and sometimes much longer, but three days has been the period in the great majority of my cases. Where I have received a history of an unusually long period of prodrome, I am inclined to think that the paralysis escaped notice for a few days.

In making a diagnosis of poliomyelitis, a physician should examine the case with his mind perfectly unbiased, and, by doing this, I think a great many mistakes would be avoided, and possibly a great many unrecognized cases would be recognized. I find that too many physicians during an epidemic, or threatened epidemic of a disease, will have their minds too firmly fixed on this particular disease to enable them to make an impartial diagnosis. I had this fact impressed on my mind years ago when investigating smallpox. Many excellent physicians would jump at conclusions and make a diagnosis of smallpox, and wonder how they could have made such a mistake, when I convinced them they were dealing with a case of chicken pox, syphilis, or some other eruptive disease. I was called to see one old lady, 65 years old, for suspected poliomyelitis. She had a blood pressure of 200 mm. and a paraphlegia that was plainly due to a blood clot on the brain. I was called to see another case of suspected poliomyelitis, in a young lady 21 years old, that proved to be hysteria. I know I made no mistake in this case, for I performed a miracle (?) (in the eyes of the family), and cured her before I left the house.

Prophylaxis. There is nothing much to be said about prophylaxis in poliomyelitis. The only known means of prevention, as we understand it today, is isolation and disinfection. The State Board of Health requires a strict quarantine of five weeks, at the end of which a thorough disinfection of the premises is demanded. As many authorities seem to think that the infection is given out, as well as received, through the mucous membrane of the nose and mouth, it is well to look after this part of the child's anatomy, the patient as well as the exposed children.

An irrigation or cleansing of these parts with some recognized antiseptic, is all that could be advised. There is one thing, however, which I cannot refrain from mentioning in this connection, and that is, forbid children from playing with pet cats and dogs.

Treatment. If my remarks on etiology, symptomatology and prophylaxis have been a disappointment, I fear my remarks on treatment will be more so. Personally, my experience in the treatment of poliomyelitis has been very limited. It is useless to say that a specific is yet to be discovered. The treatment in the acute stage is largely empirical. Urotropin is given quite often, probably on the theory of it being an antiseptic, but just what influence it could expect to have in attacking a lesion of the spinal cord is beyond my comprehension. If, however, the germs of poliomyelitis extend to the mucous membrane of the bowels, as some authorities seem to think, it may be of some benefit. Iodides also are given quite frequently, but I share the same opinion of this drug that I do of urotropin, unless perchance the child should be of a scrofulous diathesis, or presents evidence of inheriting a luetic taint. Strychnine carefully given at the proper time may be of some value. About the injection of adrenalin, I can add nothing to what you have already read in your journals. I believe the future treatment and cure of poliomyelitis, if we are so fortunate as to discover a cure, will be through the serum route. The serum treatment, however, is at present in the experimental stage. Just what degree of success is being obtained, I am unable to say. It does not seem unreasonable to me, however, that the antitoxins in the serum secured from an immunized patient would attack and neutralize the micro-organisms responsible for causing poliomyelitis. I do not doubt that poliomyelitis is a constitutional or blood disease, with a predilection for attacking the spinal cord, the same as diphtheria is a constitutional or blood disease, the germs of which have a predilection for attacking the mucous membrane of the throat and trachea. If this theory is correct, I believe scientists are on the right track, and I truly hope they will soon be able to demonstrate the efficacy of this treatment to a certainty.

In the acute stage of poliomyelitis, I believe the patient should remain as quiet as possible. I do not think that massage should be advised early in the case. While it may have no bad effect on the muscles involved, I think it is liable to irritate the child, and possibly prolong the acute stage, if not increasing the liability of causing an extension of the lesion of the spinal cord.

After the acute stage has passed and the child is beginning to gain strength, I believe massage should be carried on vigorously and systematically. Here is where gentlemen of the osteopathic cult may play an important part, but I would not advise any of my fellow-practitioners to turn their patients over to these gentlemen, for if you have the time and patience, I think you can do equally as well. Electricity may also be used to advantage in the latent stage, if used properly, but never advise the parent to buy a battery and use it himself on the patient. There is another matter which I wish to mention in this connection, which would not be necessary if the laws of our country were such as to always protect the ignorant and unwary, but as they are not, it again becomes the duty of the physician to act the part of the good Samaritan. Quacks and unscrupulous representatives of mechanical appliances are following in the wake of this disease, the former claiming to cure paralysis by some miraculous drug or power, and the latter, the representatives of mechanical appliances, urging upon the parents the necessity of some brace or mechanical appliance to either assist the impaired muscles, or correct some deformity caused by the disease. There is no doubt but that braces and appliances do good in some cases, but the judgment of this should be left to the competent physician, or orthopedic surgeon. But I will say in conclusion that, whatever the treatment, either medicinal or mechanical, the physician who has a very extensive practice in poliomyelitis will many times be doomed to bitter disappointment and his little patients to a life of partial helplessness.

NOTES OF A CASE OF INFANTILE PARALYSIS.*

C. F. Hewins, M. D.,
LODA, ILL.

Eleanor McFarland, aged 6 years, had scarlet fever in November, 1915, with endocarditis, fol-

*Read at the meeting of Iroquois-Ford Medical Society at Gibson City, Ill., Sept. 5, 1916.

lowed by sore throat, which recurred several times.

Present illness began Aug. 2, 1916, with sore throat and fever. I saw her first Aug. 3 at 1:30 P. M. Pulse, 120; respiration, 36; temperature, 102.5. Has nose bleed and red, swollen tonsils, with vertical headache, and backache. Complains of great weakness. She walked from one room to another, but limped. Abdomen distended. Ate nothing today. Bowels moved well. Has vomited. I gave her a gargle of Sod. bicarbonate, novasparin 5 gr. every 3 hours, and laxative.

Aug. 4, 1916, 8:40 A. M.: Pulse 116, respiration 22, temperature 100.3. Nose obstructed, but has not bled. She slept badly. There has been a small stool from laxative and enema. Has vomited once this morning. Ate nothing. The throat looks better. Heart dullness is enlarged to the left. There is endocarditis. I applied silver nitrate 10 per cent. to tonsils and gave calomel ¼ grain, and soda 1 grain every two hours till four are taken, or bowels move. 8:30 P. M., pulse 150, temperature 104. She has vomited several times today. Not since 5 P. M. About 8:50 P. M. I gave her a graduated bath for 10 minutes to reduce fever. After this, temperature was 103 (mouth). She has passed no urine since 12 M. No stool. I gave her phenacetin 5 grains and 1 grain calomel and 4 grains soda. She vomited about 10 P. M. and following this vomited many times, a brown matter with a little blood, a coffee-ground vomit. A period of collapse followed this. Surface cold, pulse imperceptible at wrist; two hypodermics of strychnia sulphate, 1/60 gr., 40 minutes apart, helped the pulse greatly. It returned at the wrist, and the surface became warm slowly. After this she rested quietly.

Between 12 and 1 a. m. Dr. Wylie saw her with me. She had not used the left leg well all day. I noticed the paralysis distinctly about 9 or 10 P. M. At that time it was complete in left leg, but she could move the toes slightly. Right leg could be drawn up in eversion and abduction. Breathing was embarrassed, quick and irregular.

12:30 A. M., Aug. 5 I got 4 fl. oz. urine by catheter. About 9 P. M., Aug. 4, and soon after, she had three or four copious, very dark liquid stools. None after 12 P. M. These were not offensive, and seemed to result from the calomel. She rested quietly then, and I left her about 1:30 A. M., the 5th.

Her mind was clear all this time. At 5 A. M., Aug. 5, she was sweating profusely, and I gave her strychnine sulphate 1/30 gr. and atropine sulphate 1/200 gr. hypodermically. This improved the pulse and checked sweating. The pulse improved and could be counted at wrist, but was very rapid, as high as 180.

From 6 A. M. she became irrational with nystagmus and twitching of fingers, had a convulsion at 7 A. M., and death occurred at 7:30, the heart ceasing first, then respiration.

From 5 A. M. to death she did not use or move the right leg, but it lay helpless beside the left one, the foot extended. All leg and knee reflexes absent. Pupils dilated widely just before death. They had been unequal a short time before.

There was much tenderness of spine and extremities.

THERAPEUTIC STARVATION IN INFANCY.*

JOSEPH BRENNEMANN, M. D.,
CHICAGO.

Overfeeding is now quite universally accorded a foremost place in the etiology of gastro-intestinal disorders in infancy. So persistently have the dangers of overfeeding been dinned into us, in season and out of season, by physician and layman, by newspaper and magazine writer, that we have come to look upon it as the only great danger. In our zeal not to overstep the upper limit of an infant's diet we have all but forgotten the most elementary fact that the lower limit also cannot be transgressed with impunity. I, myself, have long been convinced that prolonged underfeeding, especially as a therapeutic measure in the treatment of all manner of acute disorders in infancy, is one of the most common, and one of the most serious errors that we make in feeding babies. It is the chief purpose of this paper to call attention to this widespread custom of leaving babies on a starvation diet for long periods of time far beyond the necessities of the case; and to emphasize the fact that while it is often necessary to starve a baby for a short period of time in order

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to remove some digestive disturbance, in doing so we are only combating a greater by a lesser evil. *In itself, starvation is always harmful,* and is not infrequently a menace to life itself. This statement requires no evidence to support it—it is the statement of a self-evident fact.

It is still the almost universal custom to reduce radically the food of any infant that is sick, no matter what the illness. A course of calomel and a day or two or more of barley water is still quite the rule no matter whether we have to deal with a dyspepsia or an ileo-colitis with diarrhea, or a pneumonia with constipation. The reasons are more or less evident. An infant vomits with nearly every serious acute illness, especially with those accompanied by high fever; the tongue becomes coated, the breath strong, and there is either diarrhea or constipation. If now the real cause of this disorder is not evident, and the cause is not always evident, then what is more natural than to fall back on the diagnosis of "intestinal trouble" which has the sanction of hoary tradition as the one great cause of infantile disorders, *especially the obscure ones!* That a radical reduction in diet, even to complete starvation for a short period, is rationally indicated in purely digestive disorders with a diarrhea that is nearly always present, is evident enough. It is not so evident in the non-digestive disorders that the diet should be reduced beyond the point to which Nature herself reduces it by taking away the child's appetite. It is well, then, to consider therapeutic starvation first in digestive disorders; second in parenteral infections; and thirdly to call attention to a few other conditions in early infancy that are characterized by inadequate nourishment, either qualitively or quantitively.

A baby that has a true digestive disorder, i. e., a diarrhea due to food, is usually given a cathartic, and is placed for 24 hours on a water, or tea, or cereal water diet. Following the cathartic there may be an increased or a lessened number of stools, depending upon the severity of the diarrhea and the nature and dosage of the cathartic. The stools that result from the cathartic are usually more or less greenish and always contain a great deal of mucus. After the cathartic has effected its purpose of removing all food from the intestinal tract, while the baby is still on a starvation diet, the succeeding bowel movements no longer contain milk remnants and are therefore not yellow. The water or tea or cereal water is wholly absorbed and the baby has a stool that is identical with that of a baby that is getting no food. This *starvation or hunger stool* is made up of intestinal secretions, bile pigments, etc., with no milk admixture, and is, therefore, always very soft, of a greenish brown color, and is largely made up of semi-transparent mucus. There are commonly two or three stools a day. Such a stool is just as normal for a baby on barley water as is a soft egg yellow, mushy stool for an infant on the breast. Such a brownish, green, slimy stool is, therefore, in itself an indication to resume feeding rather than to continue the starvation diet, for a barley water diet is practically identical with starvation.

The lack of appreciation of the fact that a *hunger stool* is a normal stool, and of the further fact that cathartics cause not only an increase in the frequency and looseness of the stools, but also an increased amount of mucus, and a greenish color, is responsible for the fellowing vicious circle that is by no means uncommon:

A baby has a slight diarrhea and it is given a cathartic and nothing but barley water for 24 hours. The next day the stools that are unfortunately not inspected personally are reported to be still "a little frequent, quite loose, greenish and slimy." "Loose, green, slimy and frequent" are terms that have become synonymous in both lay and medical mind, with a pathological stool—and a pathological stool requires catharsis and starvation! The cathartic is repeated and the barley water is continued for another 24 hours. The stools remain the same, or get a little worse, and the same treatment is continued. The stools are anxiously watched for the return of the "normal" yellow color which will never come back so long as the child is being purged and is given no milk. *A yellow stool on a barley water diet is just as likely to occur and would be just as normal as would a purple stool on a milk diet!*

It is a very familiar fact to all of us that babies are kept on such a starvation diet, not only for one or two days but even for as many weeks. Often the food is changed after a time from barley water to rice water or oatmeal water, which often satisfies the mother, but has no appreciably different effect on the baby. The use of small amounts of whey, of albumin water, or of broth

or buttermilk for prolonged periods of time, belongs still in the near starvation category. All of these things are so well illustrated in the following extreme, but nevertheless typical case, that I cannot refrain from giving it at some length:

A normal child of 19 months, living in an adjoining state, weighed 25.5 pounds, and was perfectly well until one evening he became "feverish and restless." The subsequent history is given in the mother's own words: "That evening his bowels moved four or five times. The movements were loose and somewhat green and distressed him quite a little, for he cried a great deal. The following morning I gave two teaspoons of castor oil. Three or four movements followed this, still green and unnatural in composition, containing quite a little mucus and undigested food. Toward the latter part of the afternoon the movements, two or three in number, began to look darker in color (moss-green) and entirely mucous in composition, but with no signs of any bloody discharge.

"I called a physician who prescribed a tablespoonful of castor oil, also an enema (normal salt). The movements the second night, about three in number, were lighter green, but still contained a great deal of mucus. The next morning the doctor prescribed another tablespoonful of castor oil, also an enema, both of which I was ordered to continue twice a day, until the movements improved in color and composition. The baby was put on a light diet of broth, a few ounces several times a day. As the movements refused to clear up the doctor ordered all broths discontinued and ordered albumin water (half of the white of an egg in a few ounces of water, for a feeding), four feedings a day.

"For two weeks I gave the baby according to the doctor's orders, a tablespoonful of castor oil every morning and every eveqing, and an enema every morning and every evening. Throughout these two weeks the movements were never more than four or five in number in one day, but continued to have the same green color, with a lot of dark brown, or almost black mucus, scattered through them.

"At the end of two weeks the doctor on the case was taken ill himself, and was obliged to leave town, leaving the case in the hands of Dr. Y. Dr. Y. ordered me to discontinue the giving of castor oil. He prescribed a pink tablet (which I found afterwards to be calomel), to be given every two hours until three had been given. This in addition to other medicines I gave for nearly three weeks. I was giving so much medicine I had to make out a schedule and figure closely to crowd it all in.

"The albumin water ('the worst possible thing to use in bowel trouble,' Dr. Y. said) was dropped and the baby put on whey—five feedings of 2 oz. each the first two days. The third day 4 oz. with two teaspoonfuls of milk to each feeding. In a few days I was allowed to give 6 qz. with four teaspoonfuls of milk. When, however, the stools began to contain curds all milk was stopped and whey alone given.

"After two weeks of this second mode of treatment the stools still contained mucus in large patches, were greenish-brown in color and of a very fetid odor. The stool still contained some curds, so the doctor discontinued the whey and ordered buttermilk—4 oz. to a feeding, four or five times a day, or broth and buttermilk to be used alternately.

"At the end of five weeks the baby was as limp as he could be. He could no longer walk, or stand, had no inclination to play and had lost about six pounds in weight.

"I might add that never at any time did the baby have any temperature over 99.6, with the possible exception of the first night, when he was so restless he wouldn't let me take it."

From this history, and from the absence of fever and of blood in the stools that excluded an ileo-colitis, and from the subsequent course, I think this was a case of therapeutic starvation, directly through withholding of food and indirectly through catharsis. I think it was Schlossmann who has aptly used the expression *"Inanitio ex-Medicis."* The child was given 20 ounces of boiled milk, 20 ounces of barley water, two dishes of farina and a slice of toast the first day. The stools at once changed from the condition described above, to brownish yellow formed stools, and with rapid increase in food the baby gained 20 ounces the first week, and remained perfectly well. I feel confident that the same gain in weight and general wellbeing would have taken place at any time after the first day or two if the child had been similarly fed and all cathartics stopped.

That food should be withheld in these cases for 12 to 24 hours is clearly indicated—but the burden of proof lies with those who maintain that it should ever be withheld longer. The intestinal canal is emptied in less than 24 hours and is ready to receive small amounts of food to be increased as rapidly as possible. That a robust infant can stand a starvation diet for many days and get away with it is demonstrated daily, but that such prolonged starvation, unless necessary, is injurious and not beneficial needs only to be stated. In some severe cases of marasmus, where all the vital functions are at the lowest ebb—a day of starvation often enough determines a fatal result. It is in these cases, where the harmful effect of starvation is at its maximum, that one is convinced of the unwisdom of the general application of the rule, "When in doubt give barley water and castor oil."

Even more unreasonable than prolonged reduction in food is repeated catharsis. A single cathartic may be indicated at the beginning, but it is hard to see any reason why it should be repeated, when the intestinal tract is empty and no new food is being given. If food is being given, then continued purgation is an indirect method of starvation because it removes the food again before it can be assimilated and digested.

Repeated cathartics not only rob the infant of the little food that is granted it, but they are likewise irritating and weakening. Many an adult feels weak and nagged after a moderate dose of calomel and yet babies are given repeatedly 0.5 of 1 grain in divided doses, without any reference to the fact that such a dose would correspond to 10 to 15 grains in an adult. The mucus that is always an integral part of a calomel stool is an evidence of the irritating effect of the drug. And yet every day we hear the statement, "the baby's bowels were in terrible condition—you should have seen the amount of mucus that the calomel brought away—even after we repeated it the second and third days!" I am strongly inclined to think that tradition, the sweet pink pill, and that comfortable feeling that comes from having some definite routine thing to do, are responsible for the continued use of calomel in these cases and not any tangible therapeutic advantage. I have myself used no calomel in this class of cases for many years, and practically never use it in any other condition, not because of any prejudice, but simply because I can see no benefit from it that compensates for its disadvantages.

The case against castor oil is much less evident. Quite unlike calomel, which often nags and irritates the bowels for some time, castor oil commonly reduces the number of stools and leaves a less irritated and more constipated condition of the bowels than before its administration. The chief objections to its use are the difficulty in giving it in many cases, the frequency with which it is vomited, and the open question of whether it really does much good to give any cathartic in diarrheal conditions even at the beginning. Personally, I rarely give even the initial dose, and certainly never repeat it in the same acute illness.

If in the purely digestive disturbances prolonged starvation is not indicated, then it is surely even less necessary, or desirable, to starve the baby that has some parenteral infection, such as pneumonia, typhoid, grippe, ileo-colitis, etc. The vomiting that occurs so regularly, especially at the beginning of infections, is purely reflex or toxic, and is not conditioned upon whether the child takes food or not. The baby is usually constipated and there is, therefore, no indication for radical reduction in food, beyond what Nature has instituted by taking the child's appetite away. It is hard to see any reason why a child with pneumonia, or grippe, should be put on barley water for several days when it has no evident digestive disturbance. Mild cathartics are here indicated to relieve the accompanying constipation, but it can usually be left on a diet that is very little, if any, reduced from that which it has been taking. It is equally hard to see why the distinction should always be made between "solid" and "liquid" food, with light cereals, toast, etc., classified as solids, and milk as a liquid. As a matter of fact cereals and toast are very soft and mushy, almost liquid in composition after they enter the stomach, while milk, especially if given raw, forms a large, hard curd that actually increases in size for several hours, and physiologically should be classed among the most solid foods. There seems to me no reason, rationally or empirically, why one should not in these conditions give all the usual "solid" foods that the baby is accustomed to, if it will take them.

In gastro-intestinal infections, such as dysentery or ileo-colitis, slightly different conditions exist. These are not primarily digestive disturbances, but are infections, not of the lungs or of the throat, but of the intestinal mucosa, and we have, therefore, not only the same conditions as in any parenteral infection, but the added factors of a functionally impaired intestinal mucous membrane, and an increased peristalisis that rapidly removes the intestinal contents from the field of digestion and absorption. These cases are pathologically more like typhoid, clinically more like the diarrheas of digestive origin. The food must be adapted to the peculiar conditions imposed by the disease, and wide divergence of opinion exists as to the most appropriate food. The indication, however, is to feed, not to starve the case, even though they continue to have frequent loose stools with large amounts of blood and mucus. An appropriate food will not make the diarrhea worse, and the child will get more nourishment to help combat the long and serious

illness, and therapeutic starvation will only tend to hasten the fatal end.

Several other instances of what I have chosen to call therapeutic starvation may be very briefly discussed here. The first of these has to do with an interesting condition observed only during the first few days of life. A new born baby that does not get its mother's milk, or some other food, in sufficient quantity will regularly run a temperature, commonly on the third day, occasionally on the second, and nearly always on the fourth, day. This temperature commonly runs from 101° to 103° F., but may go up to 105° or 106°. With no other treatment except the giving of milk, either from the breast or from a bottle, the so-called *"Inanition Temperature"* will wholly disappear as in the crisis of a pneumonia, within 12 to 24 hours. While it may, therefore, be normal for a baby to get very little food for two or three days after birth, after the third day, if the mother's milk has not come, it should be fed, and imperatively so if it has a temperature. These babies usually lose alarmingly, often a pound or more in a few days. The diagnosis of an obstetric infection, or of pneumonia, or of an intestinal toxemia is nearly always made, the baby is purged and even removed from the breast or from bottle food, whereas the administration of food alone will at once cure the condition. If untreated this temperature may persist for days, and even weeks —as, for example, where a baby is put to the breast regularly, but for one reason or another gets nothing. I have seen a case that after twelve days of starvation on a fruitless breast, with a constant temperature of 100° to 103°, became so weak that it could not take the nipple, nor even swallow when food was put in its mouth with a medicine dropper. Even then a few feedings with a *stomach tube, a therapeutic life line that should be used more frequently in infancy,* restored the child to a condition in which it could take first the medicine dropper and then the bottle, and even in this case the temperature dropped to normal and stayed there in less than 24 hours.

A little later in life one of the most frequent instances of therapeutic starvation is that of leaving the baby for a long period of time on an inadequate breast alone. The statement that we hear so often, "Well, he wasn't gaining, but we didn't worry because he was holding his own"—is, of course, all wrong. A baby normally gains from 4 to 8 ounces a week, and if its weight remains stationary, that failure to gain should be given the same value as a rather rapid loss in an adult. A baby of 7 pounds at birth that "holds his own" is in a severe state of marasmus with its 7 pounds at 4 or 5 months of age. A baby that does not gain on the breast, and has no evident digestive disturbance, almost without exception fails to gain because it does not get enough to eat, and should be given additional food from the bottle.

Still later, in the second semester of life, there is a form of therapeutic under nourishment, or if I may use the expression, disnourishment, that is quite the rule. There are still a majority, perhaps, of mothers, and also many physicians, who think that a baby should be kept on the breast, or on the bottle exclusively till nearly, or quite, a year old. Now it is a well-established fact that in our day and generation, at least, babies that are kept on a milk diet alone will become pale, anemic, and very commonly rachitic, towards the end of the first year. The explanation has been offered that the relatively very large liver of the young infant contains an abundant depot of iron, that is consumed during the first semester of life, and is necessary to supplement the inadequate amount of iron contained in milk. In the second half-year of life this supply is exhausted and the infant must get additional iron from other foods to make up for its deficiency in milk, or else become anemic and often rachitic.

It is for this reason that it becomes desirable to begin other food than the bottle, or the breast, long before the end of the first year. This is especially true of the baby that has not done well on the ordinary bottle food. Such infants are best given so-called "solid," or "soft food," in addition to the bottle, as early as one can get them to take it—that is, they are fed as one would usually feed an older baby. I know of no surer therapeutic procedure in all the range of infant feeding, unless it be the use of breast milk, than is the addition of farina, cream of wheat, toast crumbs, or zwieback, broth, orange juice, etc., to the diet of an infant of 5 to 8 months of age that has not done well on the bottle alone and is constipated. It has, of course, been established that those so-called solid, or soft, or semi-solid foods are in reality much softer and more nearly liquid than is milk and they are nearly always well borne by the baby. In my own practice, the

time at which to begin such supplemental feeding has gradually been pushed down from 9 or 10 months, until now I begin as a routine the feeding of farina, toast crumbs, broth and orange juice at the fifth or sixth month, and in the case of the baby that does not do well on the bottle even at 4½ months. By the seventh or eighth month other cereals are added if desirable, and vegetables are added to the broth. By the ninth month the baby gets nearly all kinds of cereals, rice, toasts and crackers, vegetables, such as spinach, carrots, turnips, potato, asparagus tips, stewed celery, etc., either mashed up and finely divided in the broth or as a separate dish; baked apple, or apple sauce, scraped raw apple, crisp bacon, etc., all, of course, in addition to the regular bottle. On such a diet the pallor and general malnourishment of, say, an 8-month-old infant that has not done well on the bottle alone disappears in leaps and bounds. It is just these cases that have gone from one doctor to another, that have been cautiously tried on all kinds of infant foods and milk mixtures, and have not done well that form probably the largest single class of cases that ultimately go to the specialist. Then for the first time they are fed boldly all of these things that I have enumerated and that have been looked upon as "too solid" for a baby, and forthwith with almost mathematical regularity the baby gets fat and rosy.

The purely starchy foods can, of course, be added to the bottle in the form of flour, flour ball, Imperial Granum, etc., with, to that extent, the same therapeutic result. Even then it has almost seemed to me better to begin spoon-food early, for it is often difficult to get an older baby to take food from the spoon when it has so long been accustomed to the bottle alone as a means of taking nourishment.

I hope that in this rather rambling paper I may have brought out a few points that will be helpful to some one here, and will insure to some hungry baby a little more food than it might otherwise get at some crisis in its little life.

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DISCUSSION.

Dr. Clifford C. Grulee: I have not much to discuss, only to confirm. The truth of the matter is that the chief tests of a man's knowledge in the matter of infant feeding come when he has to distinguish when and when not to feed. After all is said and done that is one of the things you cannot learn out of a book; you must learn it with actual contact with the cases. A great many general practitioners would rather take their information off of a can than out of a book. There is one point on which I must disagree with the essayist and that is the point of feeding babies as early as from six to nine months, the number and variety of the articles which he mentioned. In the first place, it is extremely hard when you spoon-feed a baby to estimate accurately the amount of food which you are giving that baby. I had four cases under my control, two of which have gone to pieces under cereal feeding in that way and two have gone to pieces with vegetable feeding in the same way. The amount of iron to be obtained in a food can be obtained very well with the various cereals, such as he mentioned, and you can measure out the quantity of cereal much more accurately by putting it into a solution with the milk. In my experience it has seemed that a great deal of my difficulty has come from the fact that these children have been fed too many things, rather than too few. And very frequently I have had success insisting that the mother shall feed the child what it does not want, with the result that the child's appetite would soon increase.

Another thing that should be mentioned is the question of pallor. In these babies the pallor is not due probably so much to the fact that they do not get a variety of food as it is due to the fact, as has been recently brought out, that there is a certain element in the milk fat probably which produces the anemia. The essential thing is not so much the increase in the iron element of the food as the increase in the elements of the food which produce the anemia, in all probability the milk.

Cathartics are really archaic in the treatment of diarrhea. I have not given a cathartic in diarrhea cases for years and I do not think I will ever give one again, although I may. And the starvation period should never be continued over forty-eight hours and seldom over twenty-four hours.

Dr. H. W. Cheney: These constipated babies are brought to the physician and are given laxatives day after day and week after week, but if, after five, six or seven months of age, you begin to feed them vegetable soups, cereals, fruits and fruit juices, the constipation will be overcome and you will be surprised with the good results you will have without the use of any laxative whatever.

Dr. Geo. E. Baxter, Chicago: The trouble which usually comes from starvation is because of the practitioner misinterpreting the stools. The stools which Dr. Brennemann particularly mentioned are looked upon ordinarily as stools of bad intestinal disturbances. This I think is where the principal trouble lies, in giving cathartics and getting a cathartic stool so-called, and then continuing the misinterpretation of what he rightly calls a starvation stool.

Dr. H. E. Root, Chicago: Instead of giving so much of the white of eggs, the yolk of the egg may be fed mixed in whatever medium you choose, accord-

ing to the age and condition of the child, either barley water, rice water, or milk, or a broth. Preferably, I have used a broth made from the veal shank retaining the marrow and boiling the bone and flesh until it is well separated and then straining it, and then use that diluted with the food and I have had good success with babies to whom I have been called who were starving to death. In some of the German hospitals they use the yolk of the egg where foods of no kind agree with the child. They would give the yolk of the egg in some vehicle such as rice or barley water, to the new-born. I have not tried it with new-born, but I have tried it with those who are three, four or five months old. For instance, I would have a thin rice water made of barley water and have it thoroughly cooked, with a bit of sugar to make it palatable to remove the starchy taste, then according to the condition of the child's stomach I used the yolk of one egg well beaten and poured into rice water when it was hot enough to give the egg a slight cooking and would increase the yolk of the egg sometimes to two to one pint and feeding this every two to three hours, according to the child's need.

Dr. Brennemann, closing discussion: Where there are two or three pediatricians gathered together, there you will find a scrap. We always expect to disagree about something. I told Dr. Grulee the other evening approximately what I was going to say and he said "Good!" I went on until I got to that last place and then he said, "There we differ." I was very much surprised about that because some one told me that Dr. Grulee did not feed these other things with a spoon until the end of the first year, and I said I was sure that they misunderstood him. I do not know of any other pediatrician except Dr. Grulee who keeps babies on the bottle alone until they are a year old, either in this country or in foreign countries. I differ with him just as he differs with me, in his opinion here. I personally have seen the light and I know that it is a good thing, after the sixth or seventh month, in babies that do not do well, to give them food from a spoon and then they get fat. That is one of the few things one can promise people.

Dr. Grulee admitted that sometimes it is difficult to get them to take the spoon. It is not difficult to get a baby to take spoon food if you begin at the psychological period, which is about the sixth month, or perhaps the fifth. Let the baby go until it is a year or thirteen months old and you will have a hard time frequently to get that baby to eat. I recall a case where the mother's milk was disappearing. She went to California and would not give the baby anything else until she came back. When she came back the baby was thirteen months old. The mother had very little breast milk. The baby had never had the bottle, it would not take a spoon and I spent an hour myself in trying to feed that baby with a spoon. That baby lost three pounds in the process.

Broth and a number of those things are all right for a short period of time. I think that one of the mistakes that most of us make is that we do not appreciate what the food value of these different things is. It takes six or seven ounces of broth or barley water to have as much nourishment as one ounce of milk, and the baby is going to starve who is getting those things. Then there are said to be lots of babies "who cannot 'stand' milk." Personally, I have never seen such an one. I have seen many where it was decided that this was a baby who could not stand milk, but if you fix the milk up in a certain way you can get the baby to take it. The point I want to make is, when in doubt, do not starve the baby, but feed it and do not starve the baby under any circumstances more than twenty-four hours.

EFFICIENCY IN MEDICAL PRACTICE.*

CECIL M. JACK, M. D.,
DECATUR, ILL.

Dr. Edward Beardsley of Philadelphia has discussed this same subject in a recent paper. He treats it as would an efficiency expert called in to treat the affairs of a sickly commercial enterprise. He points out the vulnerable spots in the physician and in his methods of work, and suggests ways for their correction. I am going to grant the three points that he emphasizes in his paper: that the physician takes a careful history of the patient on his first visit; that he makes a careful physical examination with the clothing of the chest entirely removed, and that he makes a routine urine examination.

My problem will be to show how this can be done in an efficient manner, approaching my subject with this question: Are we, as physicians, getting out of our work all the good there is in it for the amount of effort spent? I am not speaking for the city specialist who has the hospital at his disposal where his patient can be sent, the laboratory work done by experts, the history taken by the interne, and the diagnosis made with these reports at hand. But I am speaking for the physician in the smaller towns and the towns of this size where the patient must be examined, the case diagnosed, the treatment started all at the first consultation. This should be done with the least possible delay to the patient, and the examination made as thorough as possible. Only in exceptional cases should it be necessary to send the patient out of your office for further consultation. To do this an efficient plan of one's work

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is necessary, and I am now giving more or less in detail the plan which we consider good. I say "we" because the physician who wishes to reach the goal of smaller general practice, larger office and hospital practice, consultations both in and out of town, and time for recreation and study, must have a partner. "Partnership in Medical Practice" could be a paper in itself.

Six years ago we built our own buildings to carry out our ideas. This building has been visited by many physicians, and is an expression of what we had wished for many years. Some changes have already been necessary, as our architect was not especially trained to make plans for such a building.

In a large cheery waiting room on the ground floor is our receiving secretary, who is also a bureau of general information. She attends to the patients' wants and is keeper of the histories. History taking is the basis of the scientific work of the general practician. From the beginning of the practice, or even earlier, the student should keep records of the cases seen or treated. In reading the medical literature of the great masters, such as Osler, or McKenzie, one can not help but see that they have been inveterate "note takers" even in their student days. To have at hand after ten, fifteen, or twenty-five years the history of every case of diabetes, tabes, typhoid, pernicious anemia, or even every pneumonia would give the physician a wealth of material from which numerous papers or discussions could be prepared, and the collective analysis of which would be of the greatest benefit to medical literature.

The patient is then received into the consulting room, and the history taken on a card. We use one of uniform size, 4x6 inches. This history we deem best taken by ourselves, not by assistants. Our experience with medical assistants has not been good. The young graduate out of college knows very little about the practice of medicine and none too much about the work for which you want him, unless especially trained. You keep him a year before he becomes useful to you, then he is gone, and you must start over. So with a graduate nurse as a nucleus, we have added girls whom we have trained for particular duties, and have found them more satisfactory.

When taking a history there runs through our mind what examinations should be made, which we write down on the left side of the first examination card. The patient is then sent to the laboratory, and the young lady whom we call our technician, collects the different secretions, takes the blood, blood pressure, etc. We have deemed it advisable to have our own clinical and Roentgen-ray laboratory. When we found that a girl technician could be taught to make blood stains far prettier than we ourselves, why should we take this time, more or less valuable, and incidentally have carbol-fuchsin all over our hands and the laboratory walls? When we found that she could count blood with a Thoma-Metz blood counter in one-third the time we could the old way, and just as accurately, we proceeded further and let her check up on Wassermann tests, finally turning that work over to her under our own supervision. She has been taught to draw the blood from the heart of the anesthetized guinea pig without killing the animal. She does not read the results of these tests, but shows them to one of us, with their proper number. We form our own opinion, and enter them on the proper history.

In Roentgen-ray work, thanks to the simplification of this machine and the ease with which Roentgenograms can be taken, the technician can do this time consuming work. In all laboratory work there must be one warning: don't expect the technician to know more about any particular test than you know yourself. She may make a better Roentgenogram or prettier blood stain, as she can give it more time, but she must not diagnose a tuberculous ankle or pernicious anemia.

In the Roentgen-ray laboratory we have followed this method: a fixed position for each part of the body, and each Roentgenogram taken in that position irrespective of the condition sought. You are able, then, to interpret any plate so taken. Tank development has greatly increased the efficiency of this work.

The Roentgenoscopic work the physician should do himself. However, here it is a great help to have the patient prepared and the machine going, so that very little time is taken in making this examination. Amber glasses worn ten minutes before entering the Roentgenoscopic room facilitates in seeing the Roentgenoscopic shadow without the preliminary waiting in the dark room. The Coolidge tube has greatly increased the efficiency of the Roentgenoscope.

Other laboratory aids, as urine and sputum examinations, tuberculin tests, polygraphic tracings in heart disease, spinal puncture, and the examination of the spinal fluid are made as indicated. The actual taking of a polygraphic tracing we do ourselves, but the setting up of the instrument and preparation of the patient are done by the girl assistant. Also in making a spinal puncture we insert the needle and draw off the fluid, but the girl technician takes care of the fluid, makes the cell count, tests for an increase of globulin, and makes a Wassermann test. These different reports are made on special cards of different colors so that they can be easily distinguished.

While these time-consuming tests are being made, and the great objection to their use is that they are time consuming, we are seeing another patient, taking another history, or perhaps making a physical examination on a patient already prepared. The physical examination is made in a small examination room where different diagnostic aids are easily accessible, such as stethoscope, electrically lighted instruments for examining the body cavities, etc.

Now with the history, the laboratory report, and the physical examination, our diagnosis is made and entered upon the right hand side of the first examination card; not only the principal diagnosis, but the secondary diagnoses. Thus: valvular heart disease, cardiac hypertrophy, auricular fibrillation, cardiac decompensation, chronic interstitial nephritis, and hypertension are placed on this card. This having been done, the history card is returned to the receiving secretary for cross indexing and case reporting.

At a moment's notice our receiving secretary can tell us how many cases we have seen of any disease, and can very readily pick out those histories that they may be studied. For example: of the 74 cases of glycosuria recorded, 63 proved to be true diabetes mellitus, 2 diabetes insipidus, and 9 glycosuria accompanying other diseases. Of the 63 cases of the true form, 24 are known to be dead. Syphilis did not seem to be a factor. The blood pressure was not raised except when there was an accompanying nephritis. Ten cases were under 21 years of age. Both cases of diabetes insipidus gave a positive Wassermann. Of the other cases of glycosuria, it accompanied such conditions as malignancy, pregnancy, exopthalmic goiter, etc.

Now the diagnosis made, is it surgical or medical? If surgical, we send the patient to the hospital and have the surgeon operate. If medical we treat it; it may be by advice only, or advice and medicine, or some other special treatment. If it has been a referred case, the findings and opinion are mailed back to the physician who referred the patient.

If some special treatment is to be given, as salvarsan, full preparation has been taught to the nurse; distilling of water, sterilization of glassware, mixing of the drug: the only part we play is in the inserting of the intravenous needle.

Concerning Roentgen-ray treatments, the patient is seen each visit by one of us, prepared by the nurse, and we judge the amount of ray to be given. To increase the efficiency of this work, two days in the week have been set aside for these treatments. Likewise, one day for the Wassermann test.

One month in the year the physician should leave town for travel or study. Physicians as a rule do not take enough time off. It is not necessary to take a post-graduate course every year. However, if there is any particular thing you want, try and get it first hand. You then not only get the proper technic, but also the enthusiasm of some great teacher. Six weeks at a hospital in Boston would benefit any physician, but a course with Cabot would be invaluable. Much benefit can be derived from visiting medical friends in other cities, picking up a point here and there, and if of use, applying it at home.

In perfecting the Wassermann technique one of us spent three weeks in a Wassermann laboratory studying the theory and practical working of this important test. Likewise one of us spent two months with Dr. James McKenzie to master the newer interpretation of heart disease. It took many visits to Roentgen-ray laboratories before this part of the work was a real aid.

Under these conditions our work has become our hobby, and yet we have time to read medical journals, assist in public welfare work, keep out of politics, read a few good books, and even play a little golf.

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EXPERIMENTAL REPRODUCTION OF ACCESSORY SINUS SUPPURATION.*

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EAST ST. LOUIS, ILL.

I present herewith a scheme for experimental reproduction of suppuration of the nasal accessory sinuses, which we use in our department at Washington University Medical School. This scheme was devised some time ago, and presented to the American Laryngological Association, by Doctor Greenfield Sluder, in May, 1914.

The anatomical material consists of human skulls decalcified and sectioned so as to afford access to the sinuses from above, to place the pus in a desired position, for the examination of the sinuses and their outlets. Every form of sinus suppuration can be demonstrated. I have had the pleasure of teaching this part of the subject to the students for the last three years, and as a scheme for holding their interest it is far superior to anything we have ever tried.

The specimens have been hardened in formaldehyde and stained in ammoniacal solution of carmine, and subsequently preserved in five per cent, aqueous solution of benzoate of soda, which keeps the tissues at about the same consistency, if the specimens have been thoroughly hardened before being put in this solution, and they can be handled without detriment to the hands.

The "pus" is a subcarbonate or hydroxide of bismuth held in suspension by the presence of mannite, an hexatomic alcohol. Nitrate of bismuth is dissolved in dilute nitric acid and about two per cent. mannite added. Sodium carbonate or hydroxide solution is added to neutralization. The precipitate is washed or allowed to settle, or is centrifuged to the thickness of buttermilk. It is then stained by the addition of a slight amount of aniline yellow and methylene-blue. This preparation may be diluted with distilled water to reproduce a seropurulent discharge, or may be centrifuged to reproduce a thicker purulent discharge. A drop of it is then introduced into a sinus which has been dissected open from its cranial aspect. The sinus may be filled to over-flowing, or a drop placed in the outlet of the sinus. The specimen is then observed as though it were the head of a patient in the usual position for observation, with the head reflector and other paraphernalia. This artificial pus may also be used in a living subject, if desired, by using a small syringe.

The subject of light used in this work is of some interest, and to serve my purposes I have brought with me a light, which I think is the best. Since the beginning of our specialty the sun has been used for making observation and its rays give the best light; however, it is not always available, hence substitutes have been gotten up. Formerly the sun's rays were allowed to fall in a pencil through a small aperture in a window onto a mirror, which reflected the rays wherever desired, but this was impractical. Then Lenox-Browne brought out the calcium light, which is a fine white light, but on account of the fact that tanks are required to contain the gases and a great deal of trouble and paraphernalia are necessary, it also has fallen into disuse.

The gas light with the "mantle" has sufficient green in it to blend with the color of a thin film of muco-pus enough to entirely mask it.

The "Liliput arc" was introduced by Ernst Leitz a few years ago, and, probably, is the best light in the market. It is always ready if the electric light current is in service. Carbons which have a zinc core, or which have been washed in a solution of zinc, give a pure white light, while the carbons which have not been thus treated give a reddish or yellowish tinged light. The principal drawback to the Liliput arc is the replenishment of the carbons, but this is negligible.

There have been many electric bulbs devised, a number of which I have tried, but the only one I have found which gives any sort of service worthy of the name is the nitrogen lamp, recently put on the market, but which is still not equal to the Liliput arc.

*Read before the sixty-sixth annual meeting of the Illinois State Medical Society at Champaign, May 17, 1916.

X-RAY, VALUE OF IN LOCALIZATION OF FOREIGN BODIES IN EYE-BALL; WITH DEMONSTRATION AND STEREOPTICON SLIDES.*

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The proper method in the early handling of cases of suspected foreign body in the orbital cavity is now, I believe, fairly well defined,

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though not yet as generally appreciated and followed as the importance of the subject requires. Positive or negative diagnoses, for instance, by means of the electro-magnet, the ophthalmoscope, the sideroscope or all these means combined in cases of suspected iron or steel in the orbit, are, in the case of a positive diagnosis, insufficient, and as a negation they are incompetent and unreliable.

It will be my purpose in this paper to bring to your attention two prime propositions concerning foreign body cases in ophthalmic surgery; first, that given a proper and well worked out technique, the x-ray is not only indispensable in these cases, but in the vast majority infallible; and second, that by an accurate mathematic localization by means of the x-ray of any foreign substances found, the subsequent surgical handling of the case is not only far more satisfactory to the surgeon, but in many instances more fortunate in the final outcome for the patient than is possible by any other known procedure.

Please note that by an accurate localization is not meant an approximate locating of the foreign body or bodies by means of two exposures taken at right angles one to the other; and neither does the phrase comprehend the stereo-Roentgenogram, which latter has in the past few years come into considerable prominence through deluxe editions of stereo plates covering a wide field of medical and surgical subjects. And to dispose of the question of the stereoscope as far as this particular field of work is concerned I will offer it as my opinion that in cases of foreign bodies in the orbital cavity the stereo is but little better than a single lateral view. It is true that the impression given the uninitiated observer by a pair of well focused stereo plates is more thrilling from a pictorial point of view, but as to their giving any definite information as to the relation of the foreign body to the various important structures contained within the orbital cavity, or even whether the foreign body lies within or outside the eye-ball, the stereogram is decidedly not to be depended upon, either as a basis of prognosis or as a guide to the surgeon in the subsequent handling of the case in the event removal of the foreign substance is decided upon.

The reason for this fact as regards the stereogram being that while in this sort of a picture we get a good idea of the position of the foreign body in its relation to the bony enclosure of the orbital cavity we do not see the soft structures contained therein and hence, as above stated, no definite information is afforded as to the relation of the foreign body to those important structures.

The very acute necessity for an accurate localization of all foreign bodies that get into the eye, but particularly in those commonest of all cases in which iron or steel is concerned, is well and tersely stated by Tivnen of Chicago in "Ophthalmology" Vol. II, 1914, when he says, "A foreign body retained in the eye, incapable of being removed, spells disaster to the eye." Von Hippel found that while iron and steel were not infrequently more or less tolerated in the lens and anterior chamber, in the vitreous degenerative changes always took place, and the size of the body within certain limits seemed to have no appreciable effect on the ultimate results. These observations of Von Hippel were confirmed by a large number of experiments in addition to clinical observations. The reports and opinions of all others who have had the opportunity to observe large numbers of this class of cases, at least so far as I am aware, coincide with this view as to the general fatality following foreign bodies and particularly metallic particles when left in the eye.

In view of this statement, two conclusions are to be drawn: first, that in every case of foreign body known to have lodged in the orbital cavity we must determine exactly where the body lies with respect to the contents of the cavity; and second, after determining the exact location, remove the offending particle with the least disturbance to anatomic integrity and relations of the important structures composing the globe. I am aware that there may be instances occasionally of foreign bodies in the eye in certain positions which do not in good judgment call for removal, but it is also my understanding that such instances are rare; they belong to the consideration of the ophthalmologist; but even in such cases an accurate localization would be first required to determine the hazards involved and to enable the surgeon to competently decide the course of his procedure. It will be understood that what are contemplated in the above rather conclusive pronouncements are cases in which the foreign body is lodged in or within the eye-ball.

The ophthalmo-surgical question as to the most successful and satisfactory method of removing foreign bodies deeply imbeded in the ball, is out

of my province in this paper. But I have had numerous occasions for giving this subject some consideration at the operating table, where in the end my own work must usually be put to the test of its efficiency, and I will ask your indulgence, therefore, a little later in the course of my demonstration to show a device which I have suggested to enable the surgeon to transfer to the surface of the eyeball the accurate information and measurements which are given him by the Roentgenologist. As far as I know, nothing has as yet been provided that satisfactorily covers this requirement. The instrument will be shown on the screen.

One of the most important and interesting questions that may be answered in a paper purposing to cover at least the high spots of the subject of foreign bodies in the eye is the following: What is the relative difficulty of showing the various substances that may be gotten into the eye, and are there any of the substances in common use in the arts and industries which may be gotten into the eyes of workmen and which cannot be unmistakably demonstrated as to presence or absence by means of the x-ray?

It might be offensive to some of my auditors for me to seem to disparage their general knowledge of this subject by going into any sort of a discussion as to whether or not iron, steel, copper, brass, lead, and the others of the radiographically opaque group of metals or their alloys can unmistakably and invariably be demonstrated when present in or absent from the orbital cavity, so well recognized amongst Roentgenologists has the affirmative of this fact become, and to save time I will assume that all present accept the fact that all the metals above named and many others can be unmistakably disposed of Roentgenologically with reference to the eye. And yet I happen to know that there are a few even amongst ophthalmologists who look with some skepticism on this statement, and who are deterred from referring their foreign body cases to the Roentgenologist, excepting as the last rather than the first resort, for the bona fide reason that they believe results in these cases in the hands of the x-ray man are at best problematical.

In speaking of the metals very commonly used in the manufacturing industries you probably noticed that I omitted one of the commonest, viz., aluminum. I did so advisedly, and for the reason that the very emphatic remarks made concerning all the other mentioned metals do not apply with the same force to aluminum. And yet, in view of the experiments I have made, some of which I will show you on the screen, I do not feel called upon to concede respecting this metal, more than that very small particles of aluminum deeply lodged in the eyeball may even with a good technique escape detection. Suffice it to say for the present purposes that in none of my experiments made under conditions as closely approximating those encountered in the living subject as it was possible for me to arrange, did I fail to readily show even the smallest particles of this metal artificially lodged in the various structures and media of pig's eyes, which were used in all my experiments.

A rather large remaining group of substances, including amongst others, stone, slate, crockery, china, porcelain, anthracite and soft coal, splinters of wood, and lastly but not least in importance the various kinds of glass, will have to be considered summarily with the brief statement that all of them with the exception of small splinters of wood can be shown, and positive or negative x-ray findings respecting these can be depended upon with but slight reservations as to two or three of the groups. However, in selecting glass from the group of the non-metallic substances as the one to form the basis of the experiments I will show you, I have not only chosen the substance that probably presents the greatest difficulty in its radiographic detection, excepting wood, but at the same time the one that has aroused more interest and discussion because of its more common occurrence than all the others combined.

Glass and aluminum will, therefore, be the only substances considered in the slides covering the experimental work which I have done and which will be shown you on the screen.

The procedure uniformly adopted in my own work in all cases of suspected foreign body in the eye is as follows. Three standardized positions are used in which the plate, head, and tube are placed in certain definite relations to each other. These three positions are used successively in every case before a negative report is made, but in the event that a foreign body is found in the first or second plate no further exposures are made for merely determining the presence of the foreign substance, and the accurate localization is then at once proceeded with. Rather than to

describe here my three standardized positions for making the exposures I will show them in slides and then briefly describe them as the pictures are placed before you. But I wish to call your special attention in this connection to a few points respecting the making of the first exposures, which few points are of too great importance to hazard the chance of overlooking them in a running description without notes:

First, the desideratum in the matter of position during exposure is to secure a plate in which the field of the orbital cavity, or at least that part of the cavity which is occupied by the eyeball, is as little obscured as possible by intervening and superimposed bony structures of the nasal and opposite orbital regions. And, secondly, to secure in several plates a composite view of the orbital cavity under examination which, taking the plates together, will permit of a satisfactory survey of the entire field occupied by the eyeball without confusing obstructions.

Also of great importance is the repetition of one or more exposures in a given position in which an inconclusive image of a suspected foreign body may be gotten. It is only by such repetition and duplication that doubts can be removed as to the significance of many shadows that are seen in the plates. An image of a foreign body can always be reproduced; an artifact never, that is, in the same place and of the same character.

I wish to call your attention especially to the beautifully clear section of the orbital walls that is accomplished in one of my positions with practically the entire elimination from the field of the opposite orbit, so as to give the impression that but half of a skull has been used in making the picture.

The importance of a clear and unobstructed radiographic view of the entire field of the globe will be better appreciated when by means of the lantern slides I will show you that an image of a foreign body which may appear quite clearly in one view may also be much obscured or quite invisible in another taken with the relative positions of tube, head and plate changed, and the point that I will hope to make clear is, that no case of suspected foreign body in the eye is thoroughly handled until all of the three standard exposures, which I will demonstrate, have been made, before a negative report is submitted. The antero-posterior position is practically never used in my work.

During the exposures in any of the positions used the patient's vision is directed and fixed by having him look at a bright spot placed in front of him at a convenient distance, strict caution being given the subject to keep the sight intently fixed during the moment of exposure, which latter never exceeds more than from a half to three-quarters of a second.

It is also of importance to even stop the patient's breathing during the moment of exposure. For in the case of very small particles of iron or steel or any of the other absolutely opaque metals the image of the foreign body may be so blurred by the slight movements of respiration or by slightly shifting the axis of vision as to lead to a negative conclusion in the presence of a foreign body. This, of course, could not occur with a particle of large size unless the accidental movement at the moment of exposure were considerable, but with a piece of metal or other substance measuring a millimeter or less it has frequently occurred within my experience that the image of the particle has been blurred to the point of uncertainty or caused to entirely disappear. This experience leads to the conclusion, then, that given a patient who is restless and difficult to control one must be extraordinarily careful in arriving at a negative conclusion in the face of a history indicating the probable presence of a foreign body.

The only method of accurate localization which I will mention is the one now used in my own laboratory to the exclusion of any other. It is the Snook modification of the original Sweet method, which is based on the mathematical principle of triangulation, with a fixed object in a determined position with respect to the center of the pupil as the basis of calculation.

A didactic description of this method without the apparatus itself or a picture of it before you would be not only tiresome but quite lost to all who have not previously acquainted themselves with the apparatus and method. I will, therefore, defer my very brief description of this method until the slides are thrown upon the screen.

Now, to dispose of the question of glass, which, as I have stated above, is generally considered quite the most important interrogation point in the field of ophthalmo-Roentgenology. Glass is

divisible from our present standpoint into two main classes. First, the varieties of glass which contain lead, barium, zinc, antimony or some other opaque metallic ingredient; and secondly, the varieties which are free from such metallic ingredients and which contain only silica, lime and soda in varying proportions. If it were not for the latter group glass would present no difficulty to the Roentgenologist, but inasmuch as a great deal of the glass which is commonly encountered in our everyday life belongs to this so-called crown glass group which is free from any metallic ingredient in any appreciable proportion there are difficulties which must be reckoned with.

Most of the colored glasses contain some metallic oxide such as ferrous oxide in pale green glass, cobalt in purple and blue glasses, nickel with potash in violet tinted glass and copper oxide in certain hues of blue, green and red glass, but the metallic ingredient is usually not sufficient to materially aid the Roentgenologist when glasses of these sorts are to be dealt with.

Ferrous oxide is the ingredient which causes the greenish tint of common sheet glass used in the vast majority of window openings, but it is in such relatively slight proportion as to the other ingredients of the glass as not to assist materially in casting an x-ray shadow, and it may be generally stated that in dealing with particles of this sort of glass in an eye, particularly if the particle is within the eyeball, the technique of the x-ray operator must be painstaking and definite if success in making reliable diagnoses is to be attained, and it may be just as certainly stated also that with merely an average technique and degree of care small particles of non-metallic glass are far more liable to be overlooked than discovered. The glass used in spectacles is, as a rule, non-metallic and presents the maximum difficulties in its detection.

The slides shown will include a comparison of the images cast by small particles of both lead, glass and non-metallic glass, together with one or two sildes which do not show the glass at all and which were made under apparently identical conditions with those in which the glass clearly shows. But for fear of unnecessarily mystifying you by this latter statement I will remind you that such discreptant results are merely matters of relative position of the plate, head and the source of light, or the tube.

Fully 95 per cent. of all cases that have come to me for localization or on account of the suspected presence of a foreign body in the eye have been cases in which iron or steel have been concerned, and coming next in frequency are the other metals commonly used in the arts and industries such as copper, lead, zinc, and brass; and next come the cases in which glass is suspected to have lodged in the eye.

As a comment on what I believe to be the rarity of cases in which glass actually gets into the eyeball I have to tell you that out of over three hundred cases in which I have made positive diagnosis and localizations of foreign bodies in the orbital cavity I have had not one in which glass has been actually found in the eyeball. Whether or not the cause of this is that I may have failed to discover the glass when present I can, of course, not say; but I can state that of the several instances in which I have reported negatively as to the presence of glass there have been none in which my finding was subsequently proven to have been inaccurate. Of course, such proving up in cases in which glass is suspected can only come about through the removal of the eye and a subsequent dissection.

When I come across an instance in which after a thorough x-ray examination I report negatively as to the presence of glass and am subsequently proven by removal of the eye to have been wrong I shall then conclude that x-ray findings in these cases are unreliable, at least so far as my own work is concerned, and that the experiments which I have performed and in which I have demonstrated the presence of non-metallic glasses artificially imbedded in pig's eyes are not dependable as criteria of what may be accomplished in the living subject. Therefore, up to date, as far as my own experience is concerned, the evidence as to all kinds of glass, both experimentally and in the live subject, is in favor of my tentative conclusion as presented in this paper, namely, that the x-ray can be expected to show even small particles of glass in the orbit and in the eyeball, providing the work of the Roentgenologist is thorough and a proper technique is employed.

Another important point which I am moved to touch upon on account of certain references which I have seen in the literature concerns the question as to where is the vanishing point as to the size of foreign bodies which can be dependably demonstrated by the x-ray. And I have in mind

particularly one case reported by Dr. Allport of Chicago, in which he stated that in an eye containing six pieces of iron or steel the Roentgenologist had reported to him but one. The article did not go on to state whether or not the particles of metal which were not demonstrated by the ray were so small as to probably have escaped detection because of their diminutive size, and the reader is left quite at a loss to account for such erratic behavior on the part of the x-ray as seems to have occurred in this case. I am inclined to explain the difficulty in this particular instance in the light of some of the experiences which I have had myself and some of which I will show you on the screen, the explanation of which is that in certain positions certain particles may not be detectable, whereas the same particle in another position may show up prominently.

And my net conclusion respecting the size, for instance, of particles of iron or steel or the other opaque metals which may be shown radiographically is that if there is a vanishing point beyond which the x-ray is not dependable that point will be found outside of and not within the eyeball. And by that I mean to say that any particle of a foreign body, with the possible exception of very minute pieces of non-metallic glass, which has a sufficient size and weight to penetrate the resistance of the anterior segment of the eyeball would be of sufficient size to be readily shown by the x-ray.

And yet I believe one of the members from Chicago will present a specimen or at least tell about a case during his discussion of my paper in which he believes that he has found a vanishing point in an extremely small particle of metal which he removed from an eye that had been examined by me and in which I repeatedly returned a negative report. This particle of metal, which the doctor exhibited later, was so small that a breath could readily blow it away and so small that it might almost have been attracted to the point of his magnet from the surrounding air. And so small was it indeed that if it were really in the eye which I examined I feel ready to admit that it might easily have escaped detection. But the difficult thing to reconcile in this particular instance is that as a physical proposition I cannot conceive of a piece of metal so small striking the eye with sufficient force to penetrate the cornea and pass through the intervening structures into the vitreous chamber. This is an interesting case and I know you will be glad to hear about it.

The conditions under which the experimental plates were made, which will be shown on the screen, were as follows:

Pig's eyes were used in the fresh state wrapped in absorbent cotton and placed in the orbital cavity of a skull. The foreign body being experimented with was imbedded in various parts of the globe, including the lens, the vitreous and the scleral wall. This arrangement of conditions was as close an approximation to those obtaining in the live subject as I was able to devise and I believe correspond sufficiently closely to the conditions encountered in actual work with the living subject so that the results of my experiments may be depended upon.

As the slides are shown the particular position in which the head was placed will be mentioned, together with any other points of technique which I think will be of interest to mention, and I will now pass on to that part of my demonstration which could be made rather lengthy but which I am pleased to assure you will be abbreviated to the point of barely bringing out the very essential thoughts which I wish to leave with you.

DISCUSSION ON SYMPOSIUM.

Dr. Clement wished to emphasize that this work of the accurate localization of the steel in the vitreous was highly specialized work. It is work requiring an extensive equipment and rather elaborate and carefully worked out technique, and should be done by a man having a maximum amount of experience. He described a case in which the staff radiographer of a hospital took several pictures and failed to locate any foreign body. Three months later the patient came to Dr. Clement, who had Dr. Wells make a picture of his eye and located a foreign body which they removed. In another case a piece of steel, not discovered by a radiographer was allowed to remain in the eye for almost a year. As in the first case, Dr. Wells took a picture of it and located it within the globe, from where it was successfully removed, although it did considerable damage in the meantime.

He thought the radiographer has passed the surgeon a little bit in locating these foreign bodies, and now that they have done that work so accurately it is up to the surgeon to find ways of relocating it on the eye and extracting it. It seems to me that it demands new instruments and new technique before it can be removed. He then exhibited an instrument which he had modified from Dr. Wells' suggestion.

Dr. Snydacker noted the marked difference in results attained by Haab and the Americans in the use

of magnets for extracting foreign bodies from the eye. Haab does not believe in taking x-ray pictures. Said that if you know how to manipulate your magnet, and you have a recent injury, it is not necessary. He gets them out without it.

The American idea is that it is absolutely necessary. Now, then, how can we reconcile that difference? How is it that we have such entirely different results from the Haab school? In the first place, he thinks Haab uses a much more powerful magnet than any of us have access to. The second reason is that over there, for some reason or other, they get their cases much more recently.

Dr. Andrews, in emphasizing the value of localization, called attention to the hand magnet with the sharp point and the advantages of that over the large magnet with the blunt point. The sharp point can be introduced in a small incision, the current turned on, the foreign body removed with much less trauma inside of the eye, ordinarily, than with the large magnet.

Dr. Gradle made a preliminary report of a new magnet consisting of a coil of wire approximately forty-five or fifty millimeters wide. The current is sent through these, and the magnetic core consists of any steel instrument that you wish to introduce. The strength of this magnet is sufficient to attract a fair-sized particle. He had not made accurate measurements along Dr. Wells' line, but can take half a grain to a grain weight of steel and drag it to a distance of about fifty millimeters with a medium size core. The advantage of this simply is that we have no weight to work with beyond the very small steel core, as the one pole of the magnet.

Dr. Ostrum noted the difficulty in securing x-ray apparatus outside of the mart centers and in the hands of the expert. He recommended for accurate practical purposes the Sloan-Dixon-Wickes apparatus. We can use it wherever we can get a machine, even though it does not do this beautiful work on the five or ten-second exposure. In thirty seconds it will get a pretty accurate exposure. He believes that the magnet operation is overworked. That the magnet is not very desirable in removing objects that have jagged edges; that it will do harm, while the forceps can be used with perfect safety.

Dr. Tydings described a case of a metallic body that passed through the eye and lodged behind the globe. If it were in the globe, there would be no choice but to try to get it out, but being behind the globe, he left it there, and expects to remove the capsule very soon.

Dr. Tivnen, the chairman, complimented Dr. Wells for his valuable paper and his original line of investigation, which he thought should be encouraged in every way, especially by sending him cases for examination.

Dr. Wells appreciated the compliments and kind words of Dr. Tivnen, which reminded him of the old maxim, "Do anything a little better than anybody else, and though you may live in a forest the world will make a track to your door." He needs only the kind of encouragement that he is getting right along in this work, and the magnificent results that are gotten in these cases. That is compound interest on the invested labor.

As to the question of long exposures being compatible with favorable results—nothing to that. In one slide a body of good size was obliterated entirely by such motion as was possible in only the fraction of a second. What about five or ten or thirty seconds? That ought to settle that question.

As to Haab's position about the lack of necessity of using the x-ray, it seems to me that that is answerable also by the fact that there are bodies that are not magnetizable at all. Surely your magnet is going to get you no results there. And if there are some cases in which you cannot rely on the magnet, why not settle the question by using the x-ray in all?

As to the question of bodies that pass through, surely we have lots of those. In those cases, as well as all others, you want your accurate localization to know where it is.

Dr. Woodruff: The proper method of dealing with a foreign body that is localized behind the eye, of course, is to let it absolutely alone. There is no possible way of removing that and it is harmless in that situation, unless, of course, it is an infected foreign body.

Dr. Ostrum refers to the use of the forceps in removing the large, jagged pieces of steel, thereby doing less damage than with the magnet. That may be true in certain pieces of steel. Of course, small pieces could not be removed with the forceps, in any event.

You get the idea from Dr. Wells that localization is easy. It is evidently a very easy proposition to localize a piece of steel when you have the apparatus and know how to do it, as he certainly does. Now, the removal is not so easy. Dr. Wells, I am afraid, is inclined to have the idea that it is just as easy to remove it as it is to localize it, but it is far more difficult.

Somebody referred to the fact that we get these cases so late and that in the Haab clinic they get these cases early. I think that is due to the optimism of the general practitioner. He always looks on the bright side of everything and he does not think there is anything in the eye. That is where the trouble comes in.

The small magnet, with a very small point, may be of value in certain cases. The idea, of course, is that if you do this work you must have all kinds of equipment.

PNEUMOCOCCAL CORNEAL ULCERS AND THEIR TREATMENT.*

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The consideration of corneal ulcers is of importance because the integrity of the eyesight is

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absolutely dependent upon clear corneal tissue. Corneal ulcers always impair its transparency to a greater or less degree. Centrally located ulcers frequently result disastrously to the vision and call for the most prompt and intelligent management. Those situated peripherally may or may not prove serious, according to whether they progress toward the center or burrow deeply with the possibility of perforating the eyeball and causing infection of the internal structures. In some instances the resulting opacities are deplorable from a cosmetic standpoint.

Owing to the limited time at our disposal I shall confine this paper to treatment of pneumococcal ulcers of the cornea, as it would be impossible to touch on all kinds of corneal ulcers, and it is the one which shows recent improvement in treatment. The prophylactic management of corneal lesions is equally important with their treatment after infection is established.

Dr. Ramsey gives what I consider very valuable suggestions in regard to preventive treatment:

It must never be forgotten that the pneumococcus, which is the cause of the ulcer, is, when it attacks the eye, as destructive to sight as it is dangerous to life when it invades the lung. Whenever it has declared itself, therefore, expert assistance becomes at once necessary. Prophylaxis is, however, a different matter, and lies almost entirely in the hands of the general practitioner who, if well informed as to the etiology of the disease, will fully realize his own special responsibility in the matter, and recognize the importance of the following recommendations.

a. Suppuration of the tear passages is a frequent source of infection of an abraded cornea; therefore, the general practitioner should advise immediate extirpation of the lachrymal sac in all patients suffering from dacryocystitis if their occupation exposes them frequently to risk of injury to the eye.

b. The chief sufferers from serpiginous ulcer belong to the laboring classes, who are very prone to neglect slight eye injuries, therefore the general practitioner should do all in his power to warn people of this class of the dangers arising from neglect, and try to teach them to seek medical advice with as little delay as possible. It is most important that all workmen be made to understand the serious nature of pneumococcal ulcer, and much good in that direction might be accomplished if, in the ambulance lectures delivered to the employes of public works, the lecturer gave some general instructions regarding the care of the eyes, and warned the men that no injury to the eye is so trivial that it can be neglected with impunity.

c. After infection has occurred the ulcer may spread with great rapidity, and all chance of saving sight be lost within a few days. Whenever, therefore, the general practitioner is consulted by a patient suffering from serpiginous ulcer he should restrict himself to giving first aid, and then with as little delay as possible send the patient to a specialist. First aid in such a case consists in washing out the conjunctival sac with a warm solution of boric acid, instilling a few drops of a 2 per cent. solution of cocaine, examining the eye carefully by focal illumination, removing any foreign body from beneath the eyelids or from the surface of the cornea, applying an ointment of 1 per cent atropine, 2 per cent. cocaine and 3 per cent. iodoform, and covering the eye with a carefully adjusted compress and bandage. The patient ought then to be sent to a specialist, for it cannot be repeated too often, or urged too strongly that the sooner the eye is treated by an expert the more satisfactory will be the result. When left to themselves, the patients rarely seek the advice of an opthalmic surgeon until days or possibly weeks after the onset of the disease, and by that time sight may be irreparably damaged. It is true that many of these patients say that in the interval they have been using a lotion (which may or may not have been prescribed by a doctor), but that cannot in any way be regarded as efficient treatment of such a dangerous disease as serpiginous ulcer.

Ramsay[1] and Hansell[2]:

What is wanted is a drug which is at one and the same time poisonous for the pneumococcus and non-poisonous for the tissues of the body, or, as Wright says, it must be mono-tropic for the protoplasm of the pneumococcus. Professor Morgenroth has recently brought forward such a drug in ethyl-hydrocuprein, and, as Wright points out, his experiments have furnished the first demonstration of the possibility of preventing and curing a bacterial—as distinguished from a protozoal or spirochaetal infection—by the administration of a drug. Morgenroth's researches were undertaken to elucidate the pharmacotherapy of pneumonia. He experimented with derivaties of quinine, and found that ethylhydrocuprein and its salts exerted a bactericidal influence specifically upon the pneumococcus, and had only a very slight effect upon other micro-organisms. Early in the course of his investigations he expressed the opinion that the drug ought to prove of great value in the treatment of serpiginous ulcer of the cornea, and encouraged his ophthalmic colleagues to put it to a clinical test. A Leber, at the meeting of the Heidelberg Ophthalmological Congress of 1913, was the first to record successful results, and since his communication Goldschmidt, Schur, Darier and others have reported favorably on the drug, which from all accounts now bids fair to dominate the therapy of pneumo-coccal ulcer of the cornea.

Morgenroth and Levy[3] were the first to call attention to the value of ethylhydrocuprein in the treatment of pneumococcus affections. Their article was followed by a second written by Mor-

1. Ophthalmic Record, September, 1915.
2. Ophthalmic Record, March, 1916.
3. Berl. klin. Wochens., 1911, bd. 34 and 44.

genroth & Kaufman[4], and a third by Morgenroth & Ginsburg[5]. Verlesen[6] described the application of the remedy to the treatment of several cases of pneumonia and reported favorably. Schur[7] also reported observations on the action of ethylhydrocuprein in ulcus cornea serpens caused by the pneumococcus.

Experimental investigations in the germicidal action of optochin (ethylhydrocuprein) on pneumococci were made by Gebb[8], who found that 2 per cent. killed pneumococci at once in the test tube, 1 per cent. after at least five minutes, 0.5 per cent. not at all after sixty minutes. In drop-dose experiments, even in 5 per cent. solutions, it does not inhibit the growth of xerosis bacilli and its germicidal property on staphylococci is not worth mentioning. It checks the growth of the diplobacilli of Morax-Axenfeld, but it is not as effective for them as for pneumococci.

Bielschowsky:[9] "Treatment of purulent ulcers of the cornea," says that while by the old method of treatment fourteen eyes out of thirty-six suffering from serpiginous ulcer were functionally lost, the results in twenty-three treated with optochin have been excellent, seventeen recovering with a vision of more than 1/10. Installations of a 1 per cent. solution, or subconjunctival injections of a 0.5 per cent. solution, were employed.

Kuemmel[10]: "Treatment of ulcus serpens," describes the methyl-hydrocuprein treatment. After rendering the cornea anesthetic he applies a 2 per cent. solution, holding it in contact for half a minute. Then he instills a 1 per cent. solution every hour, taking care that it comes in actual contact with the ulcer. This is maintained until the ulcer is thoroughly cleansed. It may be necessary to apply the 2 per cent. solution a second time in obstinate cases. The iritis is treated with atropin. He reports seventeen cases thus treated which show clearly the good effect of the remedy, only one proving obstinate.

Goldschmidt[11]: "Chemotherapy of pneumococcal diseases of the eye." Optochinum hydrochloricum is a preparation that meets every indication for a chemotherapeutic remedy. The pneumococcus is particularly affected by it. The treatment must be as intensive as possible from the start, and five or six applications are necessary during the day. He prefers a 1 per cent. ointment. The eye should be cocainized before the application. From one to three days are generally necessary for the cleansing of the ulcer. In about a hundred cases he has never seen any progression or reinfection. The treatment takes longer when the ulcers are associated with deep infiltrates. Abscess of the lachrymal sac and pneumococcal conjunctivitis are also influenced well by it.

31 North State street.

4. Centralb. f. Bacteriologie, bd. 54, 1912.
5. Berl. klin. Wochens., 1913, bd. 8.
6. Berl. klin. Wochens., 1913, bd. 39.
7. Klin. Monatsh. f. Augenh., October and November, 1913.
8. Von Graefe, Arch. f. Ophthal., 89, p. 39.
9. Aerztl. Verein, Marburg, May 24, 1914.
10. Muenchener Med. Wochenschrift, p. 1326.
11. Muenchener Med. Woch., No. 27.

DISCUSSION.

Dr. Clark, of Freeport, was impressed with the importance of early diagnosis and institution of proper treatment. In the removal of foreign bodies there is an especial laxness, in these days of contract practice for large manufacturing concerns. All injuries are classed under minor or major surgery and so cases of foreign body in the eyes are referred to the man who happens to have the contract for general work, regardless of his skill in eye work. Too often also are experts consulted among the fellows in the shop. Many such have at their elbow a cocaine solution of doubtful antiquity and sterility and without any preliminary regard for cleanliness, whittle down a toothpick to a convenient point and begin their well intentioned but oftimes disastrous attacks upon one of the finest pieces of work that the Creator has placed in man—the eye.

The Doctor described a case of infection of the cornea resulting in hypopion, which eventually required an evisceration.

This was a pneumococcus infection that he believed was directly traceable to the throat infection following a tonsillitis. We must be alive, therefore, to the possibility of focal infection about the head producing infection in ocular situations.

Personally he had but one experience with ethyl hydrocuprein in pneumococcal infection, and that was not satisfactory.

Dr. Blue took issue with Dr. Peck as to the first aid that should be given in corneal ulcers. He believed that the first aid should consist only in the placing on of a bandage for the reason that it is very important, in the treatment of the ulcer, to determine its etiology; whether it is due to pneumococcal or other infection. When it comes to the specialist, this knowledge is gained by taking a smear from the ulcer and staining it, and the preliminary treatment, as outlined, makes this more difficult and perhaps impossible.

Dr. Lydings thought the extirpation of the sacs should depend entirely upon the age of the patients, and upon their condition, because, while in some cases it is the only thing to do, in other cases, especially in the young, the infection can be controlled by other methods of procedure.

Dr. Nance believes we can do something as oculists. in instructing physicians who are in charge of many of the manufacturing plants where many of these cases originate.

He has endeavored to advise the immediate use of nitrate of silver in the cases of foreign body in the cornea. It is an easy matter to have a fresh solution of nitrate of silver, and as soon as the foreign body is removed, to insert a few drops of say one-half of one per cent. solution, which he finds is quite effective, at times, in preventing pneumococcic infection.

He hopes that the new preparation that we are all using now, the ethyl-hydrocuprein, may prove as efficacious as it is said to have been in some of the clinics in Europe. As a method of prophylaxis it may be valuable.

Dr. Dunn treated a man with cornealosis last Saturday, by injection of one to 1,500 cyanide solution, diluted the pupil, bandaged the eye, and on returning home, expects to find that ulcer in a progressive state. In his experience the use of cyanide of mercury and atropin will stop this cornealosis as surely as anything we have had.

Dr. Edmondson has used ethyl-hydrocuprein in various strengths, without effect.

Dr. Worthington is an advocate of safety first in the treatment of these cases, and believes one of our main lines of defense is in prophylaxis. He reported seeing two cases, within three months, in which the eyes were lost through meddlesome surgery. In one case a foreign body was removed by a sharpened stick by a fellowworkman, and the ulcer followed, with the loss of the eyesight. In the second case, a sharpened pencil was used by the workman, the case not coming to the doctor for a number of days afterwards.

He advocated more enlightenment along these lines for the laymen and co-operation to prevent these continuous destructions of useful eyes.

Dr. Snydacker was amused to hear them say "educate the layman." He was once on the witness stand in a lawsuit, where a woman sued a practitioner for twenty-five thousand dollars because she lost one eye, as the result of an ophthalmitis which had been incurred through the doctor picking at the cornea with a toothpick. Why educate the laymen?

Dr. Spitz thought it necessary in corneal ulcers to treat the patients as well as the eye. One of the worst enemies of corneal ulcers is suppurative sinuses. In some of these cases which the rhinologist was able to clear up favorably, the case got well, with just the ordinary treatment for ulcers. In two cases where the sinusitis was very severe, the sight was lost in spite of the best of treatment.

Dr. J. C. Beck, the Chairman, thought this subject will never grow old, because we have to meet with it so frequently, in our work. One of the special duties of this section should be to encourage a campaign of education that the laity may bring these cases immediately to the doctor.

He described the distinguished services to medicine in the city council of Chicago of Dr. Willis O. Nance. He thought it a proper function of our section to send such men as Dr. Nance to represent us with so much dignity and with so much judgment, to these places where they can accomplish the proper kind of legislation; sane legislation on behalf of the medical profession and ultimately, of course, for the benefit of humanity.

The element of prognosis of ulcers should be considered, particularly in old people. An infection from sinuses or infection from the teeth or pyorrhea could easily complicate the case in such a fashion that the prognosis to those folks would be very serious indeed.

Dr. Peck thought it would be impracticable to wait to make a bacteriological examination of the corneal ulcer in every case. The general practitioner should cleanse the eye as soon as the case comes to him and send the case to the aculist. The oculist can very readily determine whether that case should be subjected to bacteriological examination, but the general practitioner frequently cannot determine—in fact the general practitioner often does not recognize that there is an ulcer of the cornea.

All of the gentlemen quoted state that as a general thing the pain is very severe, in these pneumococcic ulcers, on the first application of the ethyl-hydrocuprein. It is difficult to apply it where it must come in contact with the ulcer, without cocainization.

His experience is that the laboring class cannot devote the time to treatment of dacryocystitis.

TWO YEARS CLINICAL RESEARCH ON THE TRACHOMA QUESTION IN SOUTHERN ILLINOIS.*

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An increasing desire to make some first-hand studies of the trachoma question led me to locate in Southern Illinois nearly three years ago with a view of being able to study the cases treated not only from month to month but also from year to year, and thus to form conclusions that would not be vitiated by being so far from the patient that this is impossible, as is the case when practicing in a district free from trachoma.

It was at the suggestion of Doctor Oliver Tydings that I undertook the investigation of the relation between the clinical similarities of trachoma and tuberculosis. The United States Government reports showed a remarkable ratio between the two diseases, and in the experience of Doctor Tydings the trachoma cases responded to anti-tuberculosis treatment with encouraging results, and he communicated this fact to me. I

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set about the study of the effect on trachoma cases of the use of Koch's Old Tuberculin in the dilutions of .0001, .001, and .01 and even .1 and full strength. These dilutions were given as all clinicians use them, beginning at the .0001 dilution and increasing the dosage as did Koch and Murphy. In thirty cases I found that more than 95 per cent, responded with a positive local reaction, but, to my surprise, I saw no focal reaction in any case.

There was a remarkable relief in one case of what seemed to be a relighting of an old trachoma process by the administration of a few doses of Old Tuberculin, but later study of the same case has convinced me that it is one of those old cases of trachoma, which having passed through the cicatricial stage is more or less atrophic, and that there is an associated tuberculous lesion somewhere in the body which manifests as a faint episeleral blush and responds to tuberculin in all cases even in those which have not had trachoma.

I am, therefore, of the conviction that there is no real association between trachoma and tuberculosis except as fellow criminals, with the possibility that tuberculosis is more often the cause of a general lowered resistance which therefore affords the trachoma organism greater facility for the formation of colonies in the follicles of the conjunctiva.

There being no focal reaction in any case of trachoma from the administration of Old Tuberculin in the arm in any dosage, I then used the Calmette test with a like negative result; this experiment was followed with the subconjunctival injection of the various strengths of tuberculin with no reaction after the effect of the tuberculin disappeared.

I then turned to the different therapeutic measures which have been in use in the treatment of trachoma and have found the following of value; in all cases with granulations in the formative and extrusive stage the following routine treatment has given me the most satisfactory results:

1. Denudation of the tops of the follicles with a rasp;

2. Expression of the follicles with roller forceps;

3. Careful grattage of the area involved with a piece of gauze dipped in .001 bichlorid of mercury solution till the conjunctiva looks like velvet and no granulations are palpable;

4. Powdered boric acid is then placed in the conjunctival sac and the eye closed; the eye is then dressed with White's ointment and 1 per cent. atropin, followed with hot fomentations from an hour to an hour and a half. The next day the eye is treated with powdered boric and followed by 5 per cent. Dionin ointment.

I noted in the United States Public Health Service Hospitals that the after-treatment consists of 5 per cent. trichloracetic acid in glycerin applied with a swab of cotton and immediately washed with normal salt solution.

I have observed Doctor Melville Black of Denver using freshly made solution of tincture of iodine and silver nitrate in glycerin as the most satisfactory after-treatment. But I find the pulverized boric acid and dionin to be quite as satisfactory in my hands as either of the other methods.

As soon as the acute reaction has subsided I have the patient use 1 per cent. copper sulphate in 9 per cent. glycerin and 90 per cent. water (known as the Prince Treatment). This sometimes proves to be rather painful and I have the patient dilute it with more water.

Pannus is a rather frequent complication of trachoma in the second stage and I have found the use of increasing percentage of dionin in petrolatum to be the most satisfactory agent for the speedy and complete clearing of the cornea of this distressing obstruction of vision.

The Government surgeons express to me the opinion that when the lids are free from granulations the pannus will gradually disappear, and this is true in large measure, but with the cases which I have studied carefully there are areas which do not clear and these yield immediately to dionin.

In some twenty cases of entropion I have done a modified operation taken from the accepted operations in part. I make the incision at the usual place about three millimeters above the line of the lashes and down to the tarsal plate, and the upper flap is then dissected up to the upper edge of the tarsus, and the lower flap is carefully dissected down to and around the edge of the lower border of the tarsus so as to free the edge of the lid from the inturning tarsus. The lower flap is then sutured to the upper edge of the tarsal plate by which means the lashes are

directed vertically and the free ends of the sutures are then drawn to the brow and held in place by adhesive strips. I usually allow these to remain for five days, and when it is safe to remove them. The glands emptying at the margin of the lid are sectioned by this method, but after two years there have resulted no complicating cysts or chalazia—no bad after effects whatever.

In dealing with ulceration of the cornea due to trachoma, the longest time required to effect a symptomatic cure was ten weeks, while the average time was three weeks. Ulceration has a cause and that cause must be found and removed in order to insure speedy relief from the most painful of all complications of trachoma.

The cause of trachoma is frequently found to be a roughened upper lid, which having denuded the cornea and caused pain, is gripped very tightly by the patient, and this only increases the difficulty. In such cases radical treatment of the lids is necessary, as outlined above. Then with a local application of atropin and White's ointment and dionin once a week, the ulcers readily disappear.

When the ulceration is chronic and has infiltrated through the layers of the cornea, this treatment is not sufficiently radical; and I have, therefore, found the best results by the use of a subconjunctival injection of cyanide of mercury, being somewhat larger doses than are generally employed in the treatment of iritis. This usually clears the cornea of ulcers much more rapidly, and is to be preceded by the routine treatment as outlined above.

The shrinkage of the conjunctival sac is best treated by the local application of Dionin ointment, beginning with five per cent. and increasing to ten per cent. Lids that have been unable to close have been relaxed by this method until they can come together comfortably and the eye remain moist.

I have under observation now two cases of xerosis of the cornea due to lagophthalmos; in both of these cases there is a fish scale like membrane formed over the cornea, which gives it a skimmed milk appearance, very much like that of a dead animal. In these cases there are no tears, and both patients complain that the eyes have not been moist in several years.

One of these patients came to me for enucleation, but desiring to see what might be done in her case, I induced her to allow me to treat it medically, which she reluctantly consented to do. I began by irrigating the eye, and applying boric acid powder, to be followed with a five per cent. Dionin ointment. This was put on twice a week, until the eye has become moist. The scaling or exfoliating has practically ceased, and the eye is remaining moist with a considerable increase in vision.

The second case is one in which the patient has only one eye, and therefore enucleation is unthinkable. These two cases are receiving the same treatment, with a like improvement in vision. The shrunken conjunctival sac is being relaxed by the Dionin ointment and the cornea is becoming clearer; and I have hopes from the favorable progress of the two cases that we will succeed ultimately in getting sufficient relaxation by medical or surgical means to hold the lids together so that the normal moisture of the eye may become permanent.

Two and a half year's study of trachoma in its various manifestations and complications leads me to the opinion that trachoma is not a manifestation of tuberculosis, although tuberculosis predisposes to trachoma by reducing the general resistance of the body; second, with tuberculosis there is no focal reaction in the trachoma lesions; third, the proper treatment of tuberculosis in cases showing tuberculous lesions will aid in the restoration of the general resistance of the body, and, therefore, assist materially in the recovery of trachoma; but that trachoma should receive specific treatment for itself.

In my hands these chronic ulcers, pannus, symblepharon, xerosis of the cornea, are conditions that may be benefited in a marked way by appropriate treatment, and have responded most readily to the treatment outlined in this paper.

I feel that we should not discourage trachoma patients, but should rationally care for each complication, which in nearly all cases have been considerably improved, many of them rendered quite comfortable, and the patient correspondingly happy. I am inclined to the opinion that trachoma is a curable condition, when treated early with radical means and for a sufficient length of time. Of the cases I have treated in southern Illinois, none of them have required longer treatment than three months.

DISCUSSION.

Dr. Tydings noted the tubercular reaction in a very large percentage of the cases. The United States Bureau's statistics of the number of patients affected with trachoma and tuberculosis among the Indian tribes, where the reports were made, were almost parallel. That there is a relationship existing between those two diseases, there is no question in his mind. He suggested the high frequency in the way of treatment of those diseases, as it has served a very good purpose, especially in pannus and diseases involving the cornea, where it gives a very surprising reaction. He had found the use of the cyanide of mercury useful, but in some cases had distressing results from it.

He is quite sure that the roughing over of the lid is not the cause of every case of pannus, because he has seen pannus in trachoma cases where the mucosa of the lids were absolutely normal, on examination with the loop or by the other methods.

Dr. Dunn, of Cairo, Illinois, where he has practiced twenty years, quoted an eye journal to the effect that conductors on the Illinois Central trains going through Cairo, instead of calling out Cairo, called out "Trachoma," owing to the prevalence of the disease there, but admitted that they have not been able to solve the question there.

He advocated the expression operation with compression forceps in fresh cases, but never treats the conjunctiva by stripping.

Dr. Pratt, of Aurora, Illinois, noted a great many trachoma cases, on account of the railroad there. For eighteen years he has used massage of the lids with boric acid powder, and gets better results from that line than anything else. He has tried expression too, but the after-results seemed to be better by simply massaging the lids with a swab cotton wound tight, and taking up the granulations. It seems to start an inflammation there that recovers very rapidly, especially in the acute stage. He treats many men now on Saturday nights, and they are ready to work on Monday.

Dr. Edmondson said he had not used the high frequency on the cases, but advised others to try it. He believes that the use of tuberculum in these cases will be highly beneficial.

He thinks no one, at the present time, uses sufficient force on expression to lacerate the lid. It is a case of clearing up some infection, and the cyanide of mercury brings perhaps the quickest results in pannus. I use Dionin ointment every five days, increasing it to ten per cent. after three or four applications of the five per cent.

He had not heard of anybody expressing a trachoma case in the third stage. After reaching the cicatrical stage, there is nothing further to do except to take care of the complication and the sequelæ.

He found some who complained about the use of boric acid being painful. Has used it in all forms and stages and finds that there are times when it gives a very satisfactory result.

PSYCHOTHERAPY*

A Bit of History and Personal Experience.

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This paper is offered with the hope that a more general interest and inquiry into things psychical may be stimulated.

Permit me to call your attention to an art or principle which is the most ancient, and yet the most modern, of therapeutic remedies. It may be compared to love—ages old, yet ever new.

It is the most maligned and misused, and yet the most revered and universally used.

It has been used to produce the most wonderful and miraculous results. Also it has been the cause of the most terrible suffering—even death.

Perhaps no other subject has received so much attention. The literature is so voluminous that it would be more practical to measure it by the ton than by the volume. And yet the last word has not been said, nor is it even in sight.

The history of psychotherapy or suggestion is so very extensive and rich with interest, that to give anything like a well-connected review in a paper of this sort would be out of the question. So we will only notice such as will serve our purpose.

Its ancientness may be noted by the record found in the Ebers Papyrus, which contains the record of healing by the laying on of hands in 1552 B. C.

The priests of Chaldea employed the same or similar methods of healing. In the famous temples of health the priests are credited with working numerous cures by the mere touch of the hand. These temples also contained special sleeping chambers, which were reputed to give exceptional benefit by reposing in them.

Bithynia, an early Roman physician, won considerable fame by systematically using the induced trance in the treatment of certain diseases.

Mesmer is the first person of record to make any attempt to explain the phenomena. His theory was that it was a fluid that flowed through an iron rod from his body to that of the patient. Mesmer was very fantastic and spectacular in his methods, but withal he was able to arouse considerable interest. After having refused a grant from the crown for his secret, he established a school in 1783, and from which his

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pupils carried his views and methods over a very wide territory. Some time after this period quite extensive investigations were carried on in Paris and Nancy. Then follow the remarkable achievements of such men as Liebault, Charcot, Janet, Saltpetriere, and, at the present time, Monroe, Sidis, Prince, Munsterberg and a host of others.

From Buxton's "Anesthetics" I quote the following:

After Mesmer's downfall the subject was kept before the world by the practice of Marquis de Puysequr and the somnambulists. In 1829 Cloquet amputated a breast, the patient being rendered insensible through having been thrown into the hypnotic state. Elliotson, a firm believer in the practical uses of animal magnetism in surgery, employed it on several occasions with success.

Braid of Manchester, in 1841 made considerable trial of what he called neurohypnotic trance as a means of producing surgical anesthesia.

Similar experiments were carried out in India by Dr. Esdaile, who performed no less than three hundred operations upon patients in the hypnotic state.

Since 1860 the subject has received only very scant attention, so far as the regular profession has been concerned, and it is only in the last decade or so that a renewed interest is being manifest. In this time we have allowed one of the most valuable of our therapeutic remedies not to lie idle, but to be taken up by various fads and pathies, such as the Christian Science, Osteopath, Chiropractor, Faith Healer, Neoropath and a host of other drugless healers, who have absolutely nothing to recommend them except the almost infinite variety of methods in which they use suggestion, and as to the number of people requiring and accepting such treatment, witness the fact that it is sufficient to furnish a large number of these operators a competence.

To use suggestion does not require a knowledge even of the fundamentals of medicine, hence it may be used with more or less success by persons who would not be able to make an intelligent differentiation between a furuncle and a fracture.

No one can review the work of most of the old authors, or any of the late ones, without appreciating to some extent, at any rate, the vast value of pyschotherapy, and one of the great wonders is why it is not more generally used by the profession.

Why has psychotherapy fallen into disfavor with the regular profession? Just a few reasons as they have occurred to me, and here I am using suggestion in its broadest sense so as to include hypnotism, mesmerism, etc.

In the first place, suggestive therapy does not lend itself well to final analysis by any of the usual laboratory methods.

There is such a wide variation in the reaction of the different patients, and a variability of results of the different operators, and such a multitude of methods that it all tends to confusion.

Then when the microscope came into general use, and the study of germ life and its relation to the causation of diseases was taken up, the pendulum swung too far, and many of us conceived the notion that we should find a germ as the causative factor for every disease. Thus much study of bugs made us "buggy" over bugs, and we all but forgot that there ever was such a thing as psychotherapy or psychical force. The new pathology incident to our microscopical and chemical work, the new therapeutic remedies and measures, took an immense amount of time and work to bring up to its present standard of accuracy and proficiency. Then came the discovery and general use of chloroform and ether, which acted somewhat as a last straw.

Many have condemned suggestion without even a trial. Others made sporadic or only half-hearted attempts; and because the results were not immediately forthcoming, or not up to their expectations, have been rather industrious in voicing their skepticism and denunciations, and quite free in giving their opinions of those who did use it. This has had the effect of driving the more timid from the open field, and those who are less timid have taken to the advertising methods—its use as stage entertainment by street fakirs and mountebanks of every description. The fact that it forms the chief ingredient of every "get-rich-quick" scheme, fraud and swindle of every kind has given it a very shady reputation among the laity. This is not much to be wondered at because the unscrupulous have been very active, and have operated almost without let or hindrance. Hence, in the presence of such an unfavorable atmosphere and wariness any mention of hypnotism, mesmerism, or even suggestion, is sufficient to cause the patient to become suspicious, and automatically guards are placed which render your task very much more difficult, if indeed you make any headway at all. Much credit should be given the popular and lay

journals in their recent effort to overcome this very unpleasant condition of affairs.

The psychic forces may be described as being very delicate and tender and do not thrive well under adverse or unfavorable conditions. They are, indeed, so delicate and so subtle, and yet so potent and so unexplainable, that many have refused it a consideration.

No other one thing makes it so clear that each patient is a study to itself. No one can foretell the effect on any given patient with any degree of certainty till a trial or test has been made.

The advance of medicine in the last five or six decades has been truly epoch-making. We have been very diligent, and have become very successful with diseases of a mechanical nature, and we have been so busy trying to keep in the procession that we have given too little attention to the psychic influences, and, as a result, a large class of patients have appeared who needed suggestion, and that alone; whose condition could not be explained by the new pathologies, nor could they be cured by the new medical or other treatment at our command. These patients formed a forlorn procession, going from one doctor's office to another without relief, till they, in desperation, went to the Christian Science, Osteopath or some other of the psychists. There they obtained the desired relief, and in their gratitude they have reversed the procession; they now first go to the Christian Science, Osteopath or others, and, finally, if unavoidable, they will see a doctor. '(Sometimes—not always.)

We have witnessed the springing up and luxuriant growth of numerous schools and pathies, fads and fancies as the result of our neglect to furnish a variety of treatment which we have considered beneath our dignity, or for some other reason have refused to give.

The demand became imperative and insistent, so that our drugless friends did not have the time to obtain a complete medical education; besides, for their special needs, it was not essential, and by a great many of them it was considered entirely superfluous and a waste of valuable time.

Every drugless healer (also the quack and charlatan) depends on the psychic influences entirely, some of them using the crudest of methods, and as innocent of any medical training as a babe, and yet they continue to multiply.

This has produced a very unpleasant and untenable state of affairs. The various methods of licensure are anything but satisfactory, and in so far as they are controlled by law instead of Board rule, it amounts to class legislation, which is never satisfactory, and should, at the earliest moment possible, be replaced by more comprehensive enactments.

The National Licensing Board that has been recently organized, is a step in the right direction only, for the fact that an unhealthy condition is recognized. The remedy that this Board proposes is purely empirical and can in no sense act as a cure for our troubles. It will place an added burden upon the student or applicant before this Board, which in return can give only a promise of an advantage of very doubtful value because this Board can never be clothed with the power to enforce their recommendations.

Would it not be more in keeping with science if a prophylactic was offered by giving more attention to our schools and colleges? This National Board idea is almost as brilliant as the college of surgeons that was offered to the profession a few years ago.

None but the most superficial will deny those folk, i. e., the drugless healers, especially the Christian Science, the credit of doing some good —indeed, they have done much good. They have made the world a brighter and more pleasant place for a multitude of folks; but in the same breath they may be justly credited with the spread of contagious diseases, and even the loss of life, because of their lack of diagnostic acumen and their limited therapeutic and prophylactic measures.

And where does the fault lie? Is it possible that our universities and colleges are the greatest sinners? A case in point—e. g.: When I was preparing for my degrees, in neither the Washington nor the New York universities was there ever a lecture on psychiatry given. Not only that, but any reference to the subject or the works on the subject were studiously avoided, as though it were a vile pestilence.

If any school of Class A or B ever now gives anything like an adequate course in psychiatry it has not come to my notice. However, I should say just here, in connection with this statement, that my inquiry has neither been very extensive or recent.

There is, indeed, a very great need for sym-

pathy and insight to perceive all aspects of the cases which involve the mind as well as the body, and for a philosophy whereby a physician shall himself see life steadily, and also to see it whole, and so assist his patients to a like view.

To dispel false ideas which surround death with horror is surely an obvious duty; equally obligatory is it, when discussion is not feasible, to fill a patient's thoughts with all that can make his remaining life peaceful and happy. The belief is too general that psychotherapy consists in deceiving the patient for his own good. This is the method of the charlatan—but in such a role a physician can never be more than an amateur, for the charlatan succeeds best when he first deceives himself, and the true physician—not able for an instant to deceive himself—is but ill-adapted to an elaborate deceiving of others. The physician who has a unifying philosophy of his own is thereby able to dispense with makeshifts, and to speak convincingly to his patients, administer hope with truth, courage with frankness—and his sincerity will deepen public confidence.

This confidence, surely due to science and disinterested motives, is often sacrificed unwittingly by the physician himself. He administers a therapeutic lie at the earnest solicitation of the patient's friends.

Presently one of those friends falls ill, and the physician is puzzled to know why this new patient fails to respond to his word of encouragement and good-cheer. The physician whose statements, uniformly squaring with facts bear witness to his skill and to his sincerity, is the only one fitted to command the respect of the public and to inspire his patients with confidence in himself, and hence with faith in his words.

We all use suggestion more or less, some consciously and some unconsciously; also some use it to cure their patients—and some, to keep them coming.

I shall not attempt to give you any directions or methods of using suggestion; that has already been done, and so much better than I could possibly do. But I will give you a brief history of a few cases that have been selected, covering quite a period of time, range of conditions and also variety of methods used.

In the case of the first patient which I shall relate to you, the suggestions given were entirely unpremeditated and without malice of forethought. I didn't even appreciate what had been done till my attention was called to it. This, as you will readily note, is a waking suggestion, or one that is given in the ordinary conversation.

Year 1898, H. G., a robust appearing German, came to the regimental dispensary at Camp Tanner just prior to the war with Spain, said that he wanted a laxative, as he had not had a movement for three days. I took a teaspoon only level full of Epsom salts, dissolved it in one-half glass of water, he watching the stirring very intently. When handed the glass he asked what he should do with it. He was told to swallow it, of course; after doing so, he wanted to know when he could expect results. He was told that he had better supply himself with whatever he was likely to need and start, because he would have to run before he got there. The next day this patient came to the dispensary and made this request: "Oh, doctor, I never had such a lovely movement in all my life, and I had to run like hell, too."

1905. A case of incorrigibleness. J. A., referred by a minister. This boy, whose age was 17, was poorly developed and under-nourished; was several grades behind in his school work; would not apply himself; played hookey, was given to petty thieving, an inveterate liar, totally unreliable, obscene in language and manners—a masturbator. His parents and teachers had coaxed, pled, tried to bribe and used corporal punishment by turns without result. His tonsils had been removed and he had been circumcised, and still no results. When he came to my office a more pitiable specimen you will hardly ever see. His clothes were just thrown on—not even buttoned, only sufficient to keep them from falling off. His person was likewise unkept and filthy, his hair, which had been allowed to grow shaggy, was actually mangy. In order to get into his confidence, I asked him what he would like to do—if he had any plans. He thought that he would like to join the navy.

So I walked with him to the naval recruiting station, which was not a great distance away, but he was too much undersize and they would not accept him. On returning to my office, I had not yet evolved a plan of action, so he was dismissed with instructions to return the next day, which he did.

I then told him I was going to put him to sleep. He at first demurred, but after it was explained to him that no harm would follow, but that he would be benefited, he consented, and under the combined method of staring and suggestion, he very soon was sound asleep. While asleep he was told just what he must do.

In the first four treatments he was given only positive suggestions. Several post suggestions were given as a test. I will only recite one. He was told during sleep that he would return to my office three days hence at 9:15 a. m. I had forgotten all about the order, when on the morning of the appointed day at 9:15 I heard a very vigorous and business-like ring at the door. On opening it I found my patient all out of breath and panting like a race horse. After ascer-

taining that no one was in serious trouble, I had him take a seat and rest a while, and then I asked him to relate the cause of so much rush when no one was in danger. He said that he was out doing some errands for his mother, when a voice seemed to say: "You are due at the doctor's office at 9:15." When he got to the house he found that he had only five minutes in which to make seven blocks. He said to his mother: "A few minutes will not matter, I am already tired." He started out walking at a good pace, but before he knew it he was running, but he did not think of stopping, but increased his speed some, so he thought, when he discovered what he was doing.

In this case seven treatments were given with most beautiful results. He went back to school and his teacher reported that he was one of the hardest workers in her room, and in two months from the time of taking his first treatment he had gained one grade. He became neat in appearance and pleasing in address. I lost track of this patient in one and one-half years; up to that time no tendency to relapse had been noticed.

The next two cases following will illustrate the inability, or, rather, the failure, to always get the best results from waking suggestions.

1907. M. K., a little girl aged twelve years, fairly well nourished, quite nervous, came in with what she called a tick or clock in her throat. Examination revealed nothing abnormal, except a spasmodic, rythmic motion of the uvula, which could be seen to gradually descend to the base of the tongue, and then the soft palate would suddenly contract, bringing the uvula up with a clicking sound, which could be distinctly heard across the room. This would occur about forty times per minute.

She was placed on anti-spasmodics, and given full doses of the bromides and then valarian and assafoetida for four days, and at the same time waking suggestions were given her in as positive a manner as I could command, without any results that I could notice. On the fifth day she was put to sleep after Monroe's method. She responded beautifully—the spasms stopped at once and have never returned.

1909. J. C., a young man aged 19. The first examination revealed nervousness but no physical changes of importance, but this interesting bit of history wos obtained: About three months previous, while at a public sale, he saw a man have a fit. He was very much frightened at the time, and later became fearful that he would suffer the same fate. He was given a sedative and a brisk purge, with the assurance that when his bowels moved freely and the other medicine had had time to take effect, he would be all right. But instead, four days later I was called eight miles into the country to see him. I found him in a state of great fear and anxiety. He imagined first that he could not lie down, and then he could not sit down, and was afraid to go to sleep. He had not sat down for more than a few seconds at a time for the past 24 hours. Had not slept a wink in the past 48 hours. His general expression was that of abject fear, his eyes staring and wild, mucous membranes dry, respirations forty per minute, shallow and panting, pulse bounding along at 100. When asked to sit down, he was sure that he could not without some dire calamity happening, but on being assured that I could prevent anything serious, he sat down very gingerly. To complete my examination, he was asked to lie down on a lounge, which he did only after he was again reassured.

After completing my examination he was put to sleep by the Monroe method. He went to sleep very promptly, the pulse and respiration coming down to the normal within two minutes. His father, sitting near by, thought that must be a most powerful medicine to act that quick. So I kept busy for a while, explaining what a wonderful and really powerful remedy it was and just the thing the boy needed to make him well.

Five treatments were given this patient. Six weeks after the first treatment I saw this patient driving a spirited team through town and he was handling the lines and the team like a circus driver.

Recovery perfect and no indications of a recurrence to date.

A CASE OF PSYCHONALESIS.

1911. R. D. Referred by Dr. Z. A man aged 60 years, a carpenter and millwright, complained of a bursting headache and extreme nervousness. On attempting to lie down would choke up, and would be able to breathe only with difficulty, or would see things, i. e., animals or indescribable things on the walls, or the walls would appear to fall over on him. A closed room was especially disturbing—he tried sleeping out of doors—which helped for a while. He became very restless, felt compelled to walk and did so day and night; could not sit at the table long enough to eat his meals; if any one in his presence should speak of going on a journey or of a death or a funeral, it would produce what he termed "spells."

During these spells he experienced a sickish sensation, a tightening of the throat and chest, was impelled to get up and move about. Those spells had increased in frequency till he would scarcely be over one till another would come on, and many times without apparent cause. All these conditions had been coming on and increasing in severity for about ten years.

Physical examination negative, except for considerable emaciation, a worn, haggard appearance and weakness.

Treatment: He was told that he must have had a severe mental shock at some time or other, and that it would be necessary for us to go back over his life and find it to give him the desired relief. After four sittings and at the expense of much time and patience, it was found that his mother died when he was about ten years of age, and his father soon brought home a step-mother, who would not have him about, so his father took him to an uncle's to live. He was very seriously disappointed because he could not be with his father, and spent many hours looking for him in the direction from which he expected him to come. Many nights he cried himself to sleep because he did

not come. Many details were brought out by questioning, so that the entire history of his life was gone over and discussed. He was told to expect improvement to begin at once, and that very soon he would be able to go back to work, and that life would no longer be a burden to him, but a pleasure.

Results: The spell immediately became lighter and less frequent, disappearing altogether in two weeks; was soon able to sleep eight hours at a time; regained his appetite and strength, and returned to work in three weeks. While the improvement was very marked and lasting for that particular nervous manifestation it was not complete—headaches were only slightly improved—since there were also lesions of the central nervous system. Three years later our patient suffered an attack of acute mania with homicidal tendencies and died 15 days after being placed in the hospital.

SIMPLE AGGRAVATED HYSTERIA.

1910. Mrs. J., aged 65 years, came under my care a few days after running away from the Proctor hospital, while under the care of Dr. R. To recite her symptoms as she did to me would require volumes. Every day I would receive a new installment, with some of the old ones worked up in more expressive language. She had every known and many unheard-of symptoms catalogued and at her tongue's end, and loved to regale her callers with them. She never manifested any interest in things outside of herself for more than a few minutes at a time. Seemed happiest when she could get some sympathetic soul to listen and sympathize with her while she related how "terrible—perfectly terrible—her sufferings were, or how she thought she would surely die, and the time that she came very near—oh, so very near dying—was all but gone. Oh, it was just terrible!"

Well, it will be sufficient to say that the lady was in this condition more or less for fifteen years, and it seemed to have come up to its zenith about the time that she ran away from the hospital.

She had taken to her bed about four months previous, and was very helpless when anyone was about. Her physical condition was in a very fair state of preservation and repair and well nourished.

Treatment: Waking suggestion was tried, but before I knew it, she would be relating a new symptom to me. I then tried to put her to sleep, but could only get as far as the somnial stage, and after few trials failed even to do that well. Then we tried contradicting her, and in that we only succeeded in arousing a mild state of anger.

Results: In a little more than a month she was out driving every day—before the end of three months she made quite a long railroad journey to visit some friends—the most of this journey she made alone. On her return some months later, she took up and did most of her own housework. Within the last two years she has lost her husband, and is bearing up under the loss very well.

Finally, I am yet unable to say to which method the most credit should be given.

SURGICAL ANESTHESIA.

1913. Mr. I. Aged 19 years. I was requested by Dr. Z. to give the anesthesia for a rib resection for the relief of a very extensive empyema which had followed a severe left-sided pneumonia. Chloroform, about thirty drops, and suggestion were used. Following the operation, when he was told to awaken, he did so promptly and would not believe that it was all over till he was shown some of the pus.

This patient made a rapid and uneventful recovery.

In the same year the same method was used with not more than ten drops of chloroform, to remove a small tumor (a chalabion) about the size of a full grown pea from the eyelid of D. L., a little girl of only three years. The operation was timed for her regular afternoon nap. When we had finished the operation, suggestions were given for her to sleep for about her usual period, which she did, awakening as happy as usual, and did not know that anything had been done till she happened to look into the mirror as she was being made ready for bed.

Both of the above cases showed some signs of distress during the operation, i. e., the anesthesia was not complete, but there was no shock—not even a recollection of any pain.

1915. J. R., a boy 8 years old, received an infection through a wound on the thumb. When first seen the hand and arm were very much swollen, the swelling extending to the shoulder—very painful; temperature 103. But little sleep in the past 48 hours. By vigorous treatment in two days the swelling was very much cleared up except in the fleshy part of the forearm, where it showed signs of breaking down. The lad was put to sleep by suggestions only, and the arm laid open rather wide and deep in the most favorable site, which allowed a large quantity of thick black blood to escape. The boy made some fuss when this was done, but did not move the arm a fraction of an inch. He was given further sleep suggestions and told to sleep for three hours, which he did. When he awakened he had no recollection whatever of what had been done, and he was just as glad to see me after the operation as before. He proceeded to a very rapid and complete recovery.

1915. C. S., boy, ten years old, sustained a fracture of both radius and ulna about the middle third of the right arm. I saw him in 15 or 20 minutes after the accident and tried to put him into a suggestive sleep. He was very tractable and made a brave effort to do what he was told, but we did not succeed very well. The excitement of himself and those about and the pain were too much to overcome, but he did gte a thorough relaxation of the muscles and the replacement of the fragments was not hindered by even the slightest muscular resistance.

The use of suggestion in obstetrical practice is especially gratifying both to yourself and the patient. It has none of the disadvantages nor dangers of the twilight sleep or any other method of drugging. In a tractable case, suggestion is much superior to drugging.

The literature is almost bereft of reports on the use of suggestion in obstetrical work. However, I have conducted a fair number of confinements under varying stages of suggestion. The patient can be made to sleep between the contractions—a restful and thoroughly relaxing sleep. This allows a rapid relaxing and divulging of the tissues. Labor under these conditions will be more rapid and attended with less danger than any other method that I have ever tried. It will remove the *anxiety* and *fear*—the two elements that cause us the most trouble. Lacerations under these conditions become almost a negligible factor.

In several cases there seemed to be a total absence of any physical suffering, and none in whom I could arouse any response at all, would make any serious complaint. The per cent. of success in obstetrical practice is not as high as in other conditions, especially if attempted without a preliminary trial or training. If one sees the patient for the first time in the accouchment chamber, his chances for success are not flattering. There is too much excitement, and very often well-meaning persons are present who unwittingly destroy all your best efforts.

I will recite only one case, and that quite recent, in which considerable difficulties were overcome with very gratifying results:

Mrs. G. K., aged 22, first gestation, was first seen during the second or third month of gestation. Was very nervous, and when informed of her condition, entertained great fear that she could not go through the ordeal in safety. She was told at that time that there was no visible reason why she should not finish the gestation in perfect safety, also that a month or so before her confinement we would give her a treatment and training that would take her through the confinement in perfect safety and comfort. That she would not suffer any—she would have to work some, but there would not be any pain. Her nervousness increased to a rather alarming degree. From the fourth to the seventh months she would have fits of jealousy and rage. During such time she would burn books and papers, and threatened greater destruction. Also made very free use of vitriolic and unbecoming language. During her lucid periods she would realize that she had not done just what she meant to do and would promise not to do so again, but did not succeed very well. However, the attacks became much lighter and of shorter duration towards the end of the eighth month. About two weeks before confinement I tried to hypnotize her, but she became very suspicious and would not permit it. I then reasoned with her, and she finally promised to go to sleep the next time she came to the office. Her next visit to the office was just the day before she was confined, but she could not yet quite consent to go to sleep, so we did not urge the matter but explained again what would be done and just how the confinement would progress.

She listened very attentively and again promised to go to sleep the next time. When I arrived for the confinement, labor had been in progress for some hours, and her husband related that she had been nervous and restless all right and was now just about to the breaking point. She soon became more composed and followed my directions to the letter. I had her walk about for a while to favor the descent, and when the head was well engaged in the pelvis she was put to bed and soon began to show anxiety and nervousness. She was then told that she might now go to sleep. The suggestions for sleep were accepted very kindly, and I could very distinctly feel the perineum relax and she went to sleep. The sleep was quite profound and she was allowed to rest about double the time between pains that she had been getting. While the contractions were less frequent, they were now made more effective. Birth took place without the slightest outcry, or sign of pain. A few minutes after the placenta was delivered she was awakened and smilingly said that she felt perfectly comfortable. On inquiry the next day she did not have a very vivid recollection of the last few pains, especially the delivery of the placenta, but assured me that the sleep was most restful—had rested fine all night, had no soreness whatever—felt that she might just as well be up and about.

The baby was perfectly normal in every respect, well nourished, fully developed, and weighed eight pounds.

A FAR-SEEING YOUNG MAN.

A young man dropped into a state of coma, and it was several days before he fully recovered. Later he spoke of his experience with a party of friends.

"Oh, yes," the young man said, in response to a question, "I knew all the time what was going on, and I also knew that I wasn't dead, because my feet were cold and I was hungry."

"I see," thoughtfully said one of his friends, "but how did that make you think that you were still alive?"

"Well," answered the young man, "I knew that if I were in heaven I wouldn't be hungry, and that if I were anywhere else my feet wouldn't be cold."

THE FEMININE CAUSE IN MEDICINE.

Without entering into the discussion begun some time ago by an eminent physician as to the merits of women in medicine, I would like to remark the absence of the following names from the lists published: Ann Orexia, Ethyl Chloride, Belle Adonna, Carrie O. Kinesis, Vera Montanum, Anna Phylaxis, Polly O. Myelitis, Rose Acea, Meta Plastic, Sarah Bellum, Ella Phantiasis, Emma Tropia, Molly Cule and Rena L. Calculus.

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OCTOBER, 1916

Editorials

ANOTHER INSINUATION.

The *Journal of the American Medical Association* thinks we committed grave error by publishing a paper written by a member of the American Medical Association, and read before one of the component Societies. The alleged error was because the author of the paper, which was on the serum treatment of defective thyroids, referred to the Mark White treatment of goiter. Of course, if we did commit error, we are sorry for it, but we do not yet see where we were so much more in error than is our critic at times.

The Journal of the American Medical Association also insinuated that we were advertising the Mark White preparations. This error we surely did not commit. We do not know Mark White, and the ILLINOIS MEDICAL JOURNAL never advertised his products.

Our mentor also stated that Mark White is not a physician, that he can honestly lay claim only to being a veterinarian. Pasteur was not a physician. Neither Madam Curie or her late husband were physicians, and several other scientists who were very valuable to medical learning never attained the title of M. D.

To be consistent with its criticisms our critic thought it wise to follow its Mark White criticism with a letter from a missionary in China (a spiritual, not a medical missionary), who was diagnosing malignant pustule and curing it with ipecac poultices. He carried the ipecaac in his first aid packages. Sometimes he poulticed for two days and then left another one for future use; and the Journal of the American Medical Association wishes to pass on to its readers this information,—this remedy tried and recommended by a spiritual missionary from the Orient.

"Oh, Consistency, thou art a jewel."

HOSPITALIZATION OF TYPHOID FEVER.

Considerable annoyance has been caused the people in Chicago having typhoid fever in their families and the physicians taking care of them, because of a recent ruling of the Health Department. We understan dthe Department ruled that no patient having typhoid should be removed to a hospital without the consent of the Health Department. Permission would be granted by the Department to move a typhoid patient to a hospital only when a private room and a special nurse for the patient were secured.

The reason given for this ruling, we are informed, was that typhoid fever is a contagious disease. It is reputed that the real reason for the ruling was the great desire of the Department to show a smaller typhoid death rate for Chicago than other cities and previous administrations could show. The desire, of course, is creditable, but it seems unreasonable to cast such a burden of expense on poor patients as would be involved, and to put such annoyance on doctors, hospitals and ambulance owners, to say nothing of taking the business away from the doctors by putting the patients in Charity Institutions. Chicago has many little villages near its borders

which are dependent on Chicago for hospital care.

The rule, of course, prevents the poorer classes from going to a hospital at all, except the County Hospital, because they could not pay the fifty dollars ($50.00) and up per week for a private room and special nurse.

Typhoid fever is not a contagious disease, and the danger of spreading the infection by hospitalization is nil. The order, we understand, has already deprived quite a number of patients from hospital care, and has also deprived the hospitals of legitimate business. In depriving patients in this way of hospital care, the real death rate from typhoid is thereby increased, although it might not show in Chicago's mortality records.

NEW RUSSIAN PUBLICATION.

Dr. H. R. Krasnow of Chicago has started a new medical publication in the Russian language. It is a popular medical monthly magazine, devoted to enlightening the Russians among the laity concerning Hygiene and Sanitation, and also to explaining the evil doings of the quack.

We note from its pages that Dr. Krasnow is editor-in-chief; Dr. G. Frank Butler, contributing editor; Dr. Moses Sahud, associate editor; and N. A. Spiegelglass, D. D. S., secretary.

The first issue is a neat appearing little journal, and it should accomplish a great amount of good. A publication of this sort placed in the hands of our new immigrants would add greatly toward a better hygienic condition, and would help in Americanizing our foreign-born citizens. The ILLINOIS MEDICAL JOURNAL wishes the editor a full measure of success.

TUBERCULOSIS NOTES.

In pregnancy the tuberculin reaction is less than that obtained in the non-pregnant. This may be entirely negative, probably due to the fact that antibodies are not readily formed during pregnancy, which explains in part the bad effects of tuberculosis during pregnancy.

Chronic coughs in the aged should be viewed with suspicion, and the sputum examined for bacilli.

Lack of percussion, dullness or retraction does not necessarily rule out apical tuberculosis.

Tr. iodine in large doses, given in cold milk, or water is advocated as the best single drug for phthisis.

Pressure on sternum and spinal column will often in the presence of tuberculosis mediastinal glands cause the child to wince.

Four things absolutely required in making diagnosis of early tuberculosis are careful history, proper temperature record, physical examination and sputum analysis.

Single sputum examinations are not of value in early or incipient cases unless positive.

A normal or subnormal temperature in the morning with an elevated temperature in the evening is a characteristic of tuberculosis.

Malpractice suits have been instituted because of failure to diagnose tuberculosis.

A cough followed by deep inspiration will often bring out obscure rules.

Cardinal symptoms of tuberculosis: Rapid pulse, afternoon temperature, loss of weight, cough.

The first essential of treatment in tuberculosis is absolute rest.

Public Health

THE POLIOMYELITIS OUTBREAK IN ILLINOIS

SUMMER AND FALL OF 1916

DISEASE NOW SUBSIDING RAPIDLY

RETURN NEXT SUMMER EXPECTED

During the period January 1-September 23 of the current year, 760 cases of poliomyelitis (infantile paralysis) have been reported to the Illinois State Board of Health. Forty of the cases were reported prior to July 1 and the balance, 720, since that date.

Of the 720 cases reported to the State Board of Health since July 1, 648 have been confirmed as cases of this disease and 72 more found to be other forms of illness.

The reports by months for the first half of the year were as follows: January, 1; February, 4; March, 5; April, 10; May, 6; June, 14. The excess of cases for this period over the corresponding period of the preceding year was only 3, showing that there was nothing unusual about the situation, at least not until after June 1.

It was not until after July first when the public press generally began to give scare-head publicity to the epidemic prevalence of the disease in New York City that any material increase in reports of cases was noticeable in Illinois. With this publicity there came reports of cases from several areas in Illinois, cases which previously had not been diagnosed as poliomyelitis, therefore not reported and not quarantined.

Every one of the 429 cases in the State outside of Chicago were examined by the medical officers attached to the state health service and in each case the medical officer not only made out a complete clinical and epidemiological report, but he also remained on the ground long enough to give explicit

instructions to the affected families and to the local authorities in the proper handling of the cases with a view to preventing the spread of infection. In numerous instances public meetings of physicians were held and addressed by the state medical experts. The field and office forces of the state board worked day and night, seven days every week, in the effort to afford the citizens of Illinois the largest measure of protection possible.

With very few exceptions, members of the medical profession, and all health, school and municipal authorities generally co-operated generously and perfectly with the State Board of Health in efforts to check the spread of the disease. Singularly enough an area in which such co-operation was not forthcoming was territory most seriously affected and the first to which the Board's attention was directed by reason of an outbreak in the month of May. This same area has been the scene of notable epidemic disturbances before.

Briefly summarized, the following are noteworthy facts relating to the recent outbreak of the disease in Illinois:

NOT AS PREVALENT AS IN 1911

So far as the available records show, the outbreak of poliomyelitis in Illinois this year was not as serious as in some recent preceding years. The 1911 death records, which probably are only sixty per cent, complete, show a total of 92 deaths from the disease for that year. This year—1916—the death total will hardly exceed 70 and the proportion of deaths to cases will be about 9 per cent. Assuming that the death rate of 1911 was about that of 1916, the total of cases in 1911 exceeded 1,300, or about 500 more than for the present year. And yet in 1911 very little was heard about the disease; certainly there was no such panicky condition of the public mind as was evident this year. Perhaps ignorance of the true character of the disease in 1911 accounts in largest part for the difference.

A summary of the cases reported by years since 1910, with a statement of reported deaths and proportion of deaths to cases show how incomplete the records of the preceding years are.

	Reported Cases	Reported Deaths	Deaths* Per 100 Cases Per Cent
1910	137	77	56.2
1911	141	92	65.2
1912	450	58	12.9
1913	126	25	19.8
1914	142	26	18.3
1915	81	..	...
1916	648†	63†	9.7

*Reported deaths about 60 per cent complete.
†Totals for 1916 up to and including September 23, confirmed cases.
No tabulation of deaths for 1915 acount incomplete returns. New registration law in operation since January 1, 1916, bringing greatly improved registration.

DISTRIBUTION OF THE DISEASE

The distribution of the disease has been quite general throughout the state, 78 of the one hundred and two counties having had from 1 to 252 cases, the latter being Cook County. Counties reporting but one case were Carroll, Cass, Edgar, Hardin, Jasper, Jo Daviess, Henard, Perry, Pulaski, Randolph, Scott and Morgan.

The counties most seriously affected, those having the highest case rate in proportion to population, were LaSalle, 55 cases; Macon, 25 cases; Piatt, 28 cases, and portions of Bureau, DeWitt, Livingston, Moultrie, St. Clair and Clark counties had equally threatening situations.

RESTRICTED AREAS

All of the territory mentioned in the preceding paragraph was declared Restricted Area and in the interest of public safety children under 12 years of age were excluded from school, church, theatres and all public gatherings and their movements restricted in a manner tending to prevent promiscuous assembling in public places. Health certificates were required of all children over 16 years of age as a prerequisite to travel within or out of these areas.

When the restrictions were raised and the schools permitted to open, thorough medical inspection of each child prior to admission to classes was demanded.

As has been true in previous epidemics of this disease, many communities developed but one case, at least one which was recognized as poliomyelitis, and most affected families having other children in the family have had but one child affected.

The following summary shows the distribution of cases by communities:

170 communities	had	1 case.
39 communities	had	2 cases.
20 communities	had	3 cases.
4 communities	had	4 cases.
3 communities	had	5 cases.
1 community	had	6 cases.
2 communities	had	7 cases.
1 community	had	8 cases.
1 community	had	11 cases.
2 communities	had	13 cases.
1 community	had	15 cases.
1 (Chicago)	had	219 cases.

PROPORTION OF CASES ON FARMS HIGH

Outside of the city of Chicago, 155 cases out of a total of 429, or 36.1 per cent developed in strictly rural territory, on farms. The proportion of cases of this disease on farms appears to be much greater than is common to other communicable diseases. On about 12 per cent of the premises on which cases of poliomyelitis were found, a history of a paralytic affection among fowls was obtained, and such affections (not limber-neck) usually preceded the case of poliomyelitis by about 10 days. In several instances a history of paralytic affections of dogs and cats was related.

The summary of cases in families having more than one child has not yet been completed but a hurried review of the epidemiological reports show that an extremely small proportion of the affected families develop more than one case. In 50 families having a total of 117 children under 16 years of age, only 4 families (each having but two children) had more than one case of the disease.

CHILDREN WORST SUFFERERS—ADULTS NOT IMMUNE

A tabulation of the cases by ages shows:

7.1 per cent of cases under 1 year.
20.0 per cent of cases under 3 years.

38.3 per cent of cases under 3 years.
58.4 per cent of cases under 4 years.
63.5 per cent of cases under 5 years.
70.6 per cent of cases under 6 years.
77.4 per cent of cases under 7 years.
90.1 per cent of cases under 12 years.
95.2 per cent of cases under 16 years.

From the preceding table it will be seen that 77.4 per cent of the reported cases were among children under 7 years of age and 90.1 per cent were among children 12 years of age. It was children of these ages that were excluded from schools—those under 7 years being excluded until October 2 throughout the State; those under 12 years being excluded from schools in "restricted areas" until such times as conditions warranted modification of the restrictions.

That adults are not immune from attacks of this disease is fully borne out by developments in this outbreak in Illinois. Since July 1, 14 cases have been reported among persons over 20 years of age, with one death, the fatal case being that in a man 42 years of age, a banker residing at Atwood, Illinois.

DISEASE NOW SUBSIDING RAPIDLY

The following is a summary of the reported cases *by date of onset of the disease*, rather than by date reported, as in many instances reports are considerably delayed:

Reported cases by date of onset. (All reported since July 1, 1916.)

Week ended—		Week ended—	
May 20	1	July 22	37
May 27	2	July 29	44
June 3	1	August 5	56
June 10	0	August 12	77
June 17	2	August 19	72
June 24	10	August 26	68
July 1	12	September 2	63
July 8	19	September 9	78
July 15	27	September 16	58
		September 23	20

From the above it will be seen that the disease reached its maximum prevalence during the week ended September 9, and that since that time it has subsided rapidly.

At the time of writing this review the situation has so improved as to warrant the state health authorities to raise all restrictions from the restricted areas, excepting that in the vicinity of Casey in Clark county.

ORGANIZE TO FIGHT RETURN NEXT SUMMER

Health authorities of the Central States having knowledge of the usual developments of this disease when it once starts to sweep the country, are expecting a return visitation next summer at which time its development in real epidemic proportions and with a virulency approaching the passing epidemic in New York, would occasion no surprise.

In anticipation of such developments, the Illinois state health authorities are perfecting plans for a number of health conferences at different points in the state during the winter months, the object being to give the medical profession, health officials and the public generally the advantage of all the latest knowledge relating to this disease and to promote the development of more efficient health organization in our smaller cities and towns and in the rural districts, to the end that Illinois may be in the best possible position to combat any threatened invasion of the disease next summer.

These health conferences will be held at some eight different points and the programs of each will include talks and lectures by those who are best qualified to speak with authority. Present plans contemplate bringing several medical experts who were most intimately associated with the recent Eastern outbreak to address these conferences. The first of these conferences will be held in November.

DISTRICT HEALTH CONFERENCES PLANNED.

An important part of the plan of the State Board of Health, in dividing the state into sanitary districts and in placing a full-time medical health officer in charge of each, was that there should be held at frequent intervals in each district conferences of health officers. At these conferences it was proposed that the sanitary and health problems peculiar to the districts should be discussed and that schools of instruction should be conducted in which competent authorities would take up the practical application of modern preventive medicine.

It is now announced that the first of these district conferences will be held within a very few weeks, and that a conference will be held in each district during the late fall and early winter.

The very general opinion that infantile paralysis will be a serious problem in Illinois during the coming summer has decided the State Board of Health to make this disease the subject for special consideration and expert instruction at the first district conferences. As a result of these meetings, it is hoped that the State Board and the local health officers will come closely together on a campaign of disease prevention so well organized in character that it may prove most effective in the future.

Infantile paralysis will not be the only subject considered, however. Practically every phase of preventive medicine as applied to the smaller cities and rural communities will be included in the programs.

The meetings will be held in the cities most centrally located and most available in each district.

NEW STATE LABORATORY ESTABLISHED.

A new branch laboratory of the State Board of Health for the diagnosis of diphtheria has been established at Galesburg and will be known as the West State Laboratory. This laboratory will serve the counties of Rock Island, Henry, Bureau, La Salle, Putnam, Marshall, Starke, Peoria, Knox, Fulton, Schuyler, McDonough, Warren, Mercer, Henderson, Hancock and Adams.

In addition to the central laboratory at Springfield, branch laboratories are now established at Mount Vernon, Chicago and Urbana.

CUMBERLAND COUNTY SANITARY SURVEY.

An investigation which promises to set the pace in rural sanitation not only in Illinois but throughout

the nation, is now being carried on in Cumberland County through the joint efforts of the United States Public Health Service and the Illinois State Board of Health. The work of the sanitary survey is being directed by Surgeon L. L. Lumsden of the Public Health Service, while serving under him are four assistant surgeons of the Public Health Service and four representatives of the State Board of Health.

The survey is undertaken for two purposes: one to secure accurate and detailed information on the general sanitary conditions of the average mid-western rural community to serve as a basis for other community work, and, second, to determine to what extent sanitary reform may be accomplished in the communities being surveyed.

The work has been undertaken upon purely educational lines. No effort is being made to exercise police power by either of the organizations interested. Meetings have been held in most of the communities and, as far as possible, the people have been interested in the aims of the survey and in the possibilities of sanitary improvement in their own communities. These meetings were popular in character and were usually enlivened with music.

A special effort has been made to work in close touch and harmony with local health officers and other public officials, so that the work, once started, will be satisfactorily continued.

It has been recognized by sanitarians that the insanitary privy is one of the most definite menaces to the health of small towns and rural communities and the privy problem of Cumberland County has been approached in a most practical way. Plans are available whereby sanitary privies may be constructed at a cost of $3.50 up and every carpenter in the county has been instructed as to the details of erecting these buildings.

One of the immediate results of the Cumberland County survey was to be seen in the county fair held this fall. A health exhibit, furnished by the State Board of Health, was the center of interest; but, what is most interesting, the sanitary condition of the fair grounds was better than ever noted in that section before. A United States Public Health Service representative, in reporting upon the fair, said: "The sanitary conditions at the fair grounds were excellent. They constructed two large sanitary privies, one for men and one for women. All foodstuffs sold on the grounds were protected from flies and dust and kept in a cleanly manner."

Since every home in the county is being visited by the surveyors, who invariably assume the attitude of wishing to help the householder in bettering the conditions of his place, it is believed that improvements in sanitary arrangements are already to be found in the majority of premises.

SURVEY OF CHAMPAIGN AND URBANA.

Plans are practically completed for a community survey of the cities of Champaign and Urbana, which will be carried out by the various local agencies in cooperation with the State Board of Health.

The organizations which have agreed to take part in this survey are: The health departments of Champaign, of Urbana and of the University of Illinois; the Champaign County Anti-Tuberculosis League, the Department of Dairy Bacteriology of the State University, the women's clubs of Urbana and Champaign, the State Water Survey and the office of the dean of men of the University, which will furnish sociologic and pre-medical students to carry out the work of investigation.

TYPHOID FEVER IN ELGIN.

The epidemic of typhoid fever in Elgin, reported in these pages last month, and which had its origin in the double water supply of the Elgin Watch Company, has numbered about 195 cases of the disease up to this time.

After the source of infection had been pointed out by Dr. A. L. Mann and confirmed by representatives of the State Board of Health, the watch company took active steps to abate the epidemic. The State Board of Health has had a corps of representatives on the ground almost continuously, their efforts being particularly directed to the prevention of secondary cases. Education was carried into every home in which a patient was confined, and up to this time there have been practically no secondary cases except in the homes of two families, in one of which three secondary cases developed and in the other five. Both of these families were Christian Scientists and refused to call a physician or to be guided by medical advice.

Such expensive lessons as Elgin is experiencing occasionally result in the lasting benefit which comes of the establishment of an efficient and competent health department, and the State Board of Health is now cooperating with the Elgin Medical Society in an effort to secure a medical health officer and to obtain the passage of some much needed public health and sanitary ordinances.

Commission form of government is generally regarded as an advanced and progressive form of municipal control; but the tendency of cities under this modern form of government to regard lightly the health needs of the people has been commented upon by the public press throughout the country, and Elgin has been cited as an example.

TIME OF FILING COUNTY SANITARIUM PETITIONS.

On account of the action of the Board of Supervisors of one Illinois county in refusing to place the county tuberculosis sanitarium on the ballot for the fall election on account of the fact that the petition had not been filed more than sixty days before the election, the attorney-general has issued an opinion on the question, in which he holds that the action of the Board of Supervisors in this case was unsound.

According to the opinion of the attorney-general, the Board of Supervisors doubtless confused the law by assuming that the county sanitarium proposition was submitted as "a question of public policy." The law providing for referendum on questions of public policy specifies that the petition must be filed at least sixty days before the election. The county sanitarium law, however, has no such provision, and the Board of Supervisors is compelled to submit the question on the ballot, provided the petition is filed in time for the ordinary notice of election, which, under the law, the county clerk must issue within thirty days of the election.

Hence, boards of supervisors may not legally refuse to submit the county sanitarium proposition if the petitions were filed at the time of their September meetings.

ILLINOIS HEALTH NOTES.

The very early appearance of considerable numbers of cases of smallpox indicates that the disease will be widely prevalent during the coming winter.

The health exhibit of the Illinois State Board of Health at the state fair was larger than in any years past, and contained many new features. Among the newer additions to the exhibit was a moving picture house, large enough to accommodate several hundred people, where several films devoted to health subjects were shown and brief health talks were given.

The September *Health News*, the official organ of the State Board of Health, is devoted to county tuberculosis sanatoria and their need in Illinois. Thousands of copies of this number of the *Health News* have been requested for use in the seven or eight counties which will vote on the county sanitarium this fall.

THE ONLY WINNER YET

THE BELLIGERENTS ARE BEGINNING TO SEE IT.

Auto Sparks and Kicks

KEROSENE A PROBABLE FUEL OF THE NEAR FUTURE.

Kerosene, owing to its cheapness and the large number of heat units per pound contained, would be an ideal fuel if it were not for the fact that it is not sufficiently volatile to start an engine with the ordinary carburetor. Kerosene contains 22,000 heat units per pound, while gasoline contains only 19,200 units. If suitable carburetors are devised, no essential change will have to be made in the present type of engine for its use, and at the same time more miles per gallon can be obtained than with gasoline.

Disastrous fires are sometimes caused, in fact, very often, by backfiring through the carburetor, and if a pool of gasoline is present under the carburetor or in the underpan, it is very difficult to save the car. In case of a backfire followed by flames from burning gasoline under the carburetor, the best thing to do is to instantly crank the motor as rapidly as possible, so that it will start, thus drawing the flame back into the carburetor before it has time to melt the connections to the carburetor. A little sand or dirt from the road is then, as a rule, sufficient to extinguish the burning pool which is left.—*Auto Trade Journal.*

BRIGHTENING TIRES WITH STOVE POLISH.

A good alternative to the white paint often used to brighten up tires is said to be ordinary black-lead stove polish well rubbed on when the tire is clean. The black, slippery surface is neat in appearance, does not show dirt as quickly as the white and is more durable.

Oil economy, which has never entered the minds of many makers, will be forced upon them in a few years, just as fuel economy is now being forced upon the foreign manufacturer.—*The Automobile.*

CARELESS OMISSION.

A "monkey-wrench" mechanic will often omit placing cotter pins or retaining wires in the crown nuts in the transmission case or differential housing. Should one of these nuts shake off it will more than likely get into the gear mesh and break up the whole mechanism.

THAT CAR.

He owned a handsome touring car,
To ride in it was heaven,
He ran across a piece of glass—
Bill—$14.97.

He took his friends out for a ride,
'Twas good to be alive,
The carburetor sprang a leak,
Bill—$40.95.

He started on a little tour,
The finest sort of fun,
He stopped too quick and stripped his gears,
Bill—$90.51.

He took his wife down-town to shop,
To save carfare was great,
He jammed into a hitching post,
Bill—$278.

He spent all of the coin he had,
And then in anguish cried:
"I'll put a mortgage on the house
And take just one more ride."

—Exchange.

ONE LICENSE FOR ALL THE STATES.

A bill has recently been introduced in the House of Representatives by Mr. Adamson, chairman of the Interstate and Foreign Commerce Committee, providing that any operator of a self-propelled vehicle shall not be required to take out more than one license, and that it shall be recognized in all sections of the country.—*Auto Trade Jour.*

OIL FOR BALL BEARINGS.

In very rapid moving ball bearings common lubricating oil is best. In slow-moving bearings semi-hard graphite grease is best.

A CONVENIENT BRASS POLISH.

An old piece of gunny sack will polish brass work very nicely.

TESTING FOR A "SHORT."

When the switch is open, yet sparks are seen upon disconnecting and touching lead wires, there is a "short" somewhere along the line.

By making the test at different places the location can be determined.

A SIMPLE OIL TEST.

E. T. G.: In a recent issue of the columns you gave a simple method of determining the presence of acid in oils. Is there any equally simple test by which I may determine the comparative lubricating value of two different grades of oil?

A fairly reliable method consists in placing a drop of each of the two kinds to be tested side by side on a plate of glass, and observing the length of time that is required for each drop to evaporate or dry up, after it has been distributed over the plate by tipping the glass. The inferior oil will dry or gum much more quickly than will that of the better grade. This also provides a simple method of determining the comparative weight or body of two kinds of oil.

DETECTING ACID IN OIL.

O. A. P.: Are there not simple tests by which I may determine whether the oil that I am using contains a sufficient amount of acid to injure the bearings of my car?

It is said that the presence of acid may be detected by hammering a piece of sheet copper to the form of a shallow dish and therein placing some of the oil that it is desired to test. If acid is present, verdigris will form on the copper, after the oil has been left for a few hours.

Society Proceedings

IROQUOIS-FORD COUNTY.

The regular quarterly dinner and meeting of the Iroquois-Ford Medical Society was held at the New Gibson Hotel at Gibson City, September 5, 1916.

After partaking of a fine dinner and social smoke, the meeting was called to order by Dr. O. O. Hall, vice-president, the president being absent. A short prayer was offered by Dr. Hewins, followed by a symposium on poliomyelitis.

The first paper was read by Dr. Horace Gibson of Sheldon, Ill.

Dr. Hewins of Loda, Ill., gave a report of a case, with remarks on the same.

Dr. C. S. Nelson, Springfield, councilor for our district, favored the society with a very valuable paper.

The various papers were discussed by Drs. Wylie, Fuller, Lane, Cunningham, Shawl, Cottingham, and others.

On motion, a unanimous vote of thanks was tendered Dr. Nelson for favoring us with his very interesting paper.

On motion, the by-laws were suspended and Dr. M. E. C. Peterson was elected to membership in our society. Twenty members were present.

D. W. Miller, Secretary.

Personals

Dr. T. C. Hays, of Canton, suffered a fractured rib in an auto collision recently.

Dr. J. H. Stealy announced the reopening of the Freeport General Hospital recently.

Dr. E. M. Byers, recently of Buda and Kewanee, is resuming practice in Belvidere.

Dr. Charles F. Lynch, Chicago, has been appointed city health officer of Lansing, Mich.

Dr. Ira O. Paul, Winnebago, announces his candidacy for coroner of Winnebago county.

Dr. Charles C. Peck, Harvard, is a candidate for renomination as coroner of McHenry county.

Dr. Christian B. Luginbuhl has been appointed surgical attaché to the American Legation, Berlin.

Dr. G. N. Manning, of Garden Prairie, has retired and sold his practice to Dr. M. L. Hartman of Rockford.

Dr. George E. Bushnell, Rochelle, is said to be seriously ill, twenty business men offering blood for transfusion.

Dr. P. S. Winner, physician, has been transferred from the Watertown to the Chicago State Hospital, Dunning.

Dr. John J. Fyke completed a half century of practice at Odin, August 24, and was presented with a silver loving cup.

Dr. and Mrs. Alex. F. Stevenson, Chicago, have returned from a two months' motor trip along the Atlantic coast.

Dr. Everett D. Rodgers, a retired physician of Chicago, claims an attempt to blackmail him was made by a former maid.

Dr. G. M. Lisor, physician, has been transferred from the Chicago State Hospital to the Watertown State Hospital.

Dr. S. C. Andrus, Rockford, has been appointed local surgeon for the Burlington road to succeed the late Dr. W. R. Franklin.

Dr. H. W. Moore, author of "The Defective," a movie play, denies that his play is written about Dr. Haiselden and the baby Bollinger case.

Dr. William M. Hanna, Aurora, was elected surgeon-general of the Grand Army of the Republic at its recent encampment in Kansas City.

Dr. Sidney D. Jones has been placed in charge of the Fort Dodge (Iowa) Clinical and Roentgen-

Ray Laboratory, succeeding Dr. Thomas H. Glenn.

Drs. Seizaburo Okada and Waichiro Okada, of the Imperial University of Japan, visited the health department and hospitals of Chicago recently.

Dr. John W. Emmons, of Rock Grove, has bought the practice of Dr. G. W. Markley of Poplar Grove. Dr. Markley has moved to Belvidere.

Dr. C. D. Wilkins, formerly in charge of the Charity Hospital of New Orleans, has been appointed superintendent of Michael Reese Hospital, Chicago.

Dr. L. C. D. Halstead, of St. Luke's Hospital, Chicago, has been requested to take charge of a base hospital by the surgeon-general of the French military organization.

Dr. Charles E. Crawford, Rockford, was elected physician of the grand lodge of the Order of Sons of St. George at its annual meeting held in Waterloo, Iowa, recently.

Dr. Herman Adler of Boston, as agent of the Rockefeller foundation, has begun a survey of the methods of Chicago and Cook county in handling insanity and other mental infirmities.

Dr. Ernest M. Ewers, Apple River, recently of San Juan, P. R., sails from San Francisco, October 7, to take up work in a hospital in the Orient under the Presbyterian Board of Foreign Missions.

Dr. Harry W. Ackmann, Rockford, has been appointed physician for the Rockford City Traction Company and the Rockford and Interurban Company, succeeding the late Dr. William R. Franklin.

Dr. R. S. Manley, of Sadorus, has leased his office and residence to Dr. J. E. Armstrong of Centralia, who will take charge of his practice while Dr. Manley regains his health on his farm in Alabama.

Dr. V. E. Dudman has been appointed director of student health and assistant professor of hygiene at Northwestern University. He will advise the students on health matters free of expense to them.

Dr. George W. Crile, professor of surgery in the Western Reserve University, Cleveland, delivered a lecture on August 21 to the graduates of the medical department of the University of Illinois, on "Exhaustion and Restoration."

Dr. Jesse R. Gerstley returns to Chicago, October 1, and will resume the practice of pediatrics. During the last three months Dr. Gerstley has been conducting the new post-graduate course in pediatrics offered by the University of North Carolina.

Dr. R. R. Ferguson, 4175 Irving Park boulevard, Chicago, is desirous of any information or data on the following: "Is nitrous oxide oxygen gas in labor dangerous to babies? Complete statistics of the United States." Will our readers, who have had experience with this anesthesia in labor kindly give Dr. Ferguson the information asked? He will appreciate it greatly.

News Notes

—Dr. J. Clarence Webster, of Chicago, was operated on for gallstones at Royal Victoria Hospital, Montreal, recently.

—The next meeting of the Illinois State Hospitals' Medical Association will be held October 26 and 27, at the Peoria State Hospital.

—The Chicago police recently raided the office of an alleged abortion quack (not a physician) and found a list of nearly 1,500 names of women he had dealings with.

—Dr. Walter G. DuFour is moving from Chenoa to Batavia, Ill., where he takes up the practice of Dr. H. H. Whitten. Dr. Whitten, we understand, is moving to Peoria.

—The John B. Murphy Memorial Association has been incorporated at Springfield by Drs. W. A. Evans, James E. Keefe, Allen B. Kanavel, Franklin H. Martin and Frank Crozier.

—Dr. Arthur Dean Bevan, who was the victim of porch climbers at his Lake Forest home, has offered a reward for the arrest of the burglars and the recovery of the jewelry taken.

—The matter of building county tuberculosis hospitals comes before the voters of Ogle, Adams, Morgan, Livingston, La Salle, Rock Island, Greene and Kane counties at the November elections.

—The Winnebago county board found that Dr. H. A. Pattison, the county physician, had rendered services worth $2,500 for his salary of

$800 and one member even proposed to increase the salary to $1,000.

—An interesting observation on the etiology of infantile paralysis is the alleged claim that no cases have occurred among the 2,500 babies fed daily with the pasteurized milk from the depots supported by Mr. Nathan Straus in New York City.

—Dr. Carl O. Young, owner and chief surgeon of the Washington Park Hospital, who is supposed to be interned by the British authorities while on the way to Sweden with his two sons, will hear in due time that his wife has secured a court order restraining him from disposing of stock in the hospital to secure her claims for alimony.

—The next examination for appointment in the Medical Corps of the Navy will be held on or about October 23, at Great Lakes, Chicago, and other places throughout the country. Full particulars may be secured by addressing the Surgeon-General of the Navy, Washington, D. C.

—The twenty-first annual state conference of Charities and Correction will be held in Alton, October 20 to 22. In connection with this conference the Illinois Association for the Prevention of Tuberculosis, the State Association of County Home Superintendents and the State Association of Probation Officers will hold meetings.

—The circular issued by the U. S. Census Bureau showing that the death rate of New York City declined 26.8 per cent in fifteen years compared with a reduction of only 1.4 per cent in Chicago's rate, simply disclosed the fact that Chicago's rate was below 14 per thousand in 1901, 1904 and 1905, while New York's rate was above 19.

—Dr. Fred A. Besley has been appointed to the chair in surgery at Northwestern University Medical School as successor to Dr. Murphy. The surgical staff at Mercy Hospital has been reorganized by the appointment of Dr. E. Wyllys Andrews as chief of staff, and Drs. John F. Golden, F. A. Besley and W. E. Morgan as attending surgeons.

—The Cook County Commissioners seem to think that the services of medical experts capable of passing on the cases of the feeble-minded in the county court are not worth more than five dollars a day, no matter how many cases are before the court. County Judge Scully, however, advised the commissioners to compromise the claims of physicians which were much higher in several cases.

—The large number of infections of various kinds attributed to bathing in polluted lake water in Chicago the past summer has stimulated a comprehensive inquiry into the sources of pollution and remedies for the condition. The following men have been appointed a commission of investigation: The engineers, Isham Randolph, George G. Earl, Lyman E. Cooley and Langdon Pearce of the sanitary district; W. A. Nelson and W. R. Matthews of the bureau of sewers; Cicero D. Mill of the board of local improvements, and Frank R. Sadler, chief engineer of the 68th street pumping station. The physician is Dr. Herman N. Bundesen of the health department.

Marriages

Gilbert J. White, M. D., to Mrs. Ada Arends, both of Chicago, August 22.

Frank A. Anderson, M. D., Chicago, to Miss Florence Steiner of Chicago, August 19.

Jack Ralph Lavieri, M. D., to Miss Edna Cora Gibbs, both of Chicago, recently.

Alexander Aaron Goldsmith, M. D., to Miss Corinne Rosenfeld, both of Chicago, September 5.

Martin Henry Merritz, M. D., Chicago, to Miss Norma Helen Irasek of Milwaukee, May 17.

Charles Albert Robb, M. D., Rock Island, Ill., to Miss Marie Metz of Chicago, September 11.

Arthur Caldwell Gillam, M. D., to Miss Anna Suzanna Maurer, both of Chicago, September 14.

Ellis Benjamin Freilich, M. D., to Miss Mildred Kamermann, both of Chicago, about September 6.

Carl Davis Render, M. D., to Miss Dorothy June Antis, both of Oak Park, Ill., in Milwaukee, November 1.

Thomas Goodell Charles, M. D., Beardstown, Ill., to Miss Nita Robertson of Virginia, Ill., September 12.

Ralston Irving Lewis, M. D., Glen Ellyn, Ill., to Miss Virginia Folkes, at Western Springs, Ill., about August 30.

WILLIAM W. PERDUE, M. D., Mobile, Ala., to Miss Eleanor C. Bartlett of Chicago, in New York City, September 5.

Deaths

NATHAN N. E. WOOD, M. D., Chicago; Bennett Medical College, Chicago, 1878; aged 64; died at his home, September 15.

OLIVER JAY RUTH, M. D., Colchester, Ill.; Keokuk (Iowa) Medical College, 1891; aged 49; formerly a member of the Illinois State Medical Society; died in Winterset, Iowa, August 19, from intestinal obstruction.

ELIJAH C. TROUTT, M. D., Birds, Ill.; St. Louis College of Physicians and Surgeons, 1907; aged 31; formerly a Fellow of the American Medical Association; died at his home, August 11, from progressive muscular atrophy.

JAMES H. ROSE, M. D., Harrisburg, Ill.; Medical College of Evansville, Ind., 1878; aged 68; a member of the Illinois State Medical Society; and for thirty years a practitioner of Harrisburg; died at his home, August 17, from heart disease.

WILLIAM RILEY FRANKLIN, M. D., Rockford, Ill.; Chicago Homeopathic Medical College, 1883; aged 57; a Fellow of the American Medical Association; a member of the consulting staff of the Rockford City Hospital, local surgeon of the Burlington System and the Rockford Interurban Railway; was drowned, while swimming at Michillinda, Mich., August 19.

GEORGE WHITING ROSS, M. D., Carrollton, Ill.; College of Physicians and Surgeons in the City of New York, 1879; aged 59; a Fellow of the American Medical Association and formerly president of the Western Illinois Medical and Surgical Society and Green County Medical Society, and trustee of the Central Illinois State Hospital for the Insane; died August 31, from nephritis.

WILLIAM KELLER, M. D., Princeton, Ill.; St. Louis College of Physicians and Surgeons, 1884; aged 73; formerly a Fellow of the American Medical Association; a member of the Illinois State Medical Society; a graduate of medicine in the University of Tübingen, Germany, about 1865; surgeon in the Prussian army during war between Germany and Austria; died at his home, September 7, from septic pneumonia, following a carbuncle of the leg.

NEW AND NON-OFFICIAL REMEDIES.

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion with New and Non-official Remedies:

The Abbott Laboratories: Chlorazene; Chlorazene Tablets, 4.6 grains.

Merck & Company: Benzidine—Merck (for blood test).

E. R. Squibb & Sons: Thromboplastin—Squibb.

Solution of Hypophysis—Squibb.—A sterilized aqueous solution of the water-soluble active principles of the posterior lobe of the pituitary bodies of cattle, free from chemical preservatives and physiologically standardized. It has the properties of the pituitary gland, as described in New and Non-official Remedies, 1916. E. R. Squibb & Sons, New York (*Jour. A. M. A.*, Sept. 2, 1916, p. 745).

Benzidine.—In medical practice benzidine is used for the detection of occult blood. In the presence of hydrogen peroxid and acetic acid, benzidine is changed to a deep purple compound by the action of blood. The test is said to detect blood in a dilution of 1 in 300,000.

Benzidine—Merck (For Blood Test).—This complies with the standards prescribed for benzidine, N. N. R. Merck & Co., New York (*Jour. A. M. A.*, Sept. 16, 1916, p. 879).

Occult Blood Test (Dudley Roberts).—This consists of tablets, each containing 5 grains of a trituration of benzidine, 1 part, and sodium perborate, 20 parts, and glacial acetic acid (supplied in boxes containing 100 tablets in vials, and a bottle of glacial acetic acid). A tablet is treated with a weak solution of the material to be tested and a drop of acetic acid added, a greenish-blue color indicates the presence of blood. E. R. Squibb & Sons, New York (*Jour. A. M. A.*, Sept. 16, 1916, p. 879).

Mercurial Oil.—A mixture containing from 40 to 50 per cent. of metallic mercury in an oily base. The mercury is in a finely divided state and of a consistence which permits its intramuscular injection by means of a proper syringe at room temperature. The degree of subdivision of the mercury should be indicated for each brand of this product. Mercurial oil is used as a means of obtaining the systemic effects of mercury. Cumulative effects should be carefully watched for.

Mercurial Oil—National Pathological Laboratory.—A mixture of equal weights of mercury and lanolin obtained by triturating the constituents until mercury globules are no longer microscopically visible. It is marketed in graduated syringes ready for use and containing 2 Cc. National Pathological Laboratories, Chicago (*Jour. A. M. A.*, Sept. 23, 1916, p. 953).

Liquid Petroleum—Squibb, Heavy (Californian).—It is made from Californian petroleum and is claimed to be composed chiefly of hydrocarbons of the naphthene series. A brand of liquid petrolatum complying with the U. S. P. standards for liquid petrolatum and

claimed to be superior to liquid petrolatum, U. S. P. E. R. Squibb & Sons, New York (*Jour. A. M. A.*, Sept. 23, 1916, p. 953).

Thromboplastin—Squibb.—A solution of brain extract, complying with the standards for solution brain extract, N. N. R. It is marketed in 20 Cc. vials. E. R. Squibb & Sons, New York (*Jour. A. M. A.*, Sept. 23, 1916, p. 953).

Chlorazene.—Chlorazene (sodium para-toluenesulphochloramine) is an active germicide, acting much like hypochlorites, but being less irritating. Like the hypochlorites, it has the advantage over mercuric chloride, zinc chloride, etc., in that it does not coagulate or precipitate proteins, such as blood serum. Chlorazene is reported to be practically non-toxic. The Abbott Laboratories, Chicago, Ill. (*Jour. A. M. A.*, Sept. 30, 1916, p. 1021).

Book Notices

The Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago. Volume V, Number 4 (August, 1916). Octavo of 222 pages, 59 illustrations. Philadelphia and London: W. B. Saunders Company, 1916. Published bi-monthly. Price per year: Paper, $8.00; cloth, $12.00.

There are rather more topics discussed in this number than is usual. Among the most interesting are: Melanotic Neoplasm in Digastric Muscle; Mixed Tumor of Parotid Salivary Gland; Bony Ankylosis of Temporomandibular Joint; Retraction of Eyeball; Trifacial Neuralgia; Traumatic Recurrent Subluxation of Fourth Lumbar Vertebra; Tuberculosis of Spine (Three Cases); Fracture of Humerus (Anatomic Neck) with Loss of Head; Fracture of Humerus (Condyles) and Radius (Head); Ancient T-Fracture of Humerus; Ancient Fracture of Elbow-joint with Ankylosis; Postscarlatinal Arthritis of Elbow; Tuberculosis of Elbow; Ancient Ununited Fracture of Radius; Ancient Luxation of Metacarpophalangeal Joint; Occult Carcinoma of Breast with Metastases to Cervical and Mediastinal Lymph-Nodes, Giving Pressure Signs; Sarcoma of Sternum; Biliary Calculus Impacted at Ampulla of Vater; Contracted Gall-Bladder; Superitoneal Streptococcic Cellulutis; Ureteral Calculus; Ancient Fracture of Rim of Acetabulum, with Displacement of Head of Femur; Luxation of Hip-joint (Two Cases); Extensive Trochanteric Bursitis; Bone-infection Metastatic to Furuncles (Two Cases).

This number is of the usual style, and will prove more interesting than some other numbers.

A Manual of Otology. For Students and Practitioners. By Charles Edwin Perkins, M. D., F. A. C. S., Professor of Clinical Otology in New York University and Bellevue Hospital Medical College; Associate Aural Surgeon to St. Luke's Hospital; Assistant Aural Surgeon, New York Eye and Ear Infirmary; Fellow, American Otological Society, New York Otological Society, New York Academy of Medicine, etc. 12mo, 445 pages, with 120 engravings. Cloth, $3.00, net.

Based upon the author's many years of experience as a teacher of otology to both students and physicians, it is replete with the newest observations in this special branch of medicine. Being well fitted to his task, the writer has fulfilled that which is expected of him, namely, a comprehensive but not lengthy exposition of the modern practice of otology.

The book is well adapted to the student, general practitioner and specialist in diseases of the ear. Considerable prominence is given to the proper examination of the tympanic membrane, color, luster, position, integrity and structure being clearly presented, so that one can form a systematic method in diagnosis. A valuable feature is the expounding of the relationship of the Chorda tympani nerve to facial paralysis and middle ear disease, based upon the author's personal observations. It is a thoroughly practical book on otology.

Medical and Surgical Reports of the Episcopal Hospital. Hospital of the Protestant Episcopal Church in Philadelphia. Volume III. Press of Wm. J. Dornan. Philadelphia. 1915.

An unusually well presented volume of reports of interesting cases, based on the experience of the authors during their service. It is very well illustrated. Reports of this character should be used as a type for other hospitals, and would prove extremely valuable to the general profession.

Diseases of Children. By Edwin E. Graham, M. D., Professor of Diseases of Children, Jefferson Medical College, Philadelphia; Pediatrist to the Jefferson Hospital and to the Philadelphia Hospital; Consulting Pediatrist to the Training School for Feeble-minded, Vineland, N. J.; Member of the American Pediatric Society, etc. Octavo, 902 pages, with 89 engravings and 4 plates. Cloth, $6.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1916.

The author has succeeded in his efforts to produce a modern work on the diseases of children. Much attention and considerable space have been devoted to symptoms, diagnosis and especially treatment. The subjects are carefully presented, the most common and important being given the greatest attention, while the rarer and unimportant have been presented only with the known and essential facts. No attempt has been made to present theories, only known facts, proven by time and experience, being considered.

The subject of Infant Feeding is thoroughly up-to-date, the latest approved methods being given. Some of the noteworthy items include Food Injuries, Chronic Constipation, Pylorospasm, and Pyloric Stenosis. Infant Mortality, Heredity and Environment, Puberty, Fresh Air, Disease of the Liver, Spleen and Thymus Gland, Infantile Paralysis, Diphtheria, and Pertussis are articles that are given in detail. As a whole, it is a very commendable book.